CDP-490

SERVICE MANUAL

Canadian Model
AEP Model

Model CDP-490 is almost same as CDP-590.
As only the difference from CDP-590 is described in this manual, please refer to the CDP-590 service manual for the other sections.

• SECTION 6 EXPLODED VIEWS AND PARTS LIST

Page on CDP-590 Service Manual	No.	Part No.	Description
21	1	4-933-208-31	(AEP)... ..... PANEL, LOADING
	1	4-933-208-41	(Canadian)... PANEL, LOADING
	4	*3-703-244-00	(Canadian)... BUSHING(2104), CORD
	5	*4-933-201-51	(Canadian)... PANEL, BACK
	5	*4-933-201-61	(AEP)..... PANEL, BACK
	8	X-4885-950-1	(Canadian)... FOOT ASSY
	901	*A-4617-494-A	(Canadian)... MOUNTED PCB, MAIN
	907	⚠1-575-105-11	(Canadian)... CORD, POWER
	T701	⚠1-449-921-11	(Canadian)... TRANSFORMER, POWER
22	51	X-4933-205-1	(Canadian)... PANEL ASSY, FRONT
	51	A-4604-399-A	(AEP)..... PANEL ASSY, FRONT

• SECTION 7 ELECTRICAL PARTS LIST ACCESSORY & PACKING MATERIAL

Page on CDP-590 Service Manual	Part No.	Description
27	3-750-792-11	(Canadian)... MANUAL, INSTRUCTION
	*4-933-231-21	INDIVIDUAL CARTON

Note: The CDP-490 has not been supplied with remote commander.

COMPACT DISC PLAYER

SONY®

MICROFILM

9-955-801-11

Sony Corporation
Audio Group

English
90D1850-1
Printed in Japan
©1990.4
Published by Customer Relations and Service Group.

CDP-590

SERVICE MANUAL

US Model
AEP Model
E Model
Australian Model

COMPACT disc DIGITAL AUDIO

SPECIFICATIONS

Compact disc player

Frequency response	2Hz – 20 kHz ± 0.5 dB
Signal to noise ratio	More than 100 dB
Dynamic range	More than 92 dB
Harmonic distortion	Less than 0.008%
Channel separation	More than 95 dB

Outputs

LINE OUT (phono jacks)	Output level 2 V (at 50 kilohms) Load impedance over 10 kilohms
PHONES (stereo phone jack)	Output level max. 10 mW Load impedance 32 ohms

General

Power requirements	120 V AC, 60Hz
Power consumption	11W
Dimensions (approx., including projections)	430×100×280 mm (w/h/d) (17×4×11 1/8 inches)
Weight (approx.)	3.5 kg (7 lbs 12 oz)

Supplied accessories

Audio cord	1 (2 phono plugs – 2 phono plugs)
Remote commander	1
R6 (size AA) batteries	2

Remote commander

Remote control system	Infrared control
Power requirements	3 V DC with two R6 (size AA) batteries
Dimensions	Approx. 43×20×175 mm (w/h/d) (1 3/4×13/16×7 inches)
Weight	Approx. 105 g (4 oz) Including batteries

Design and specifications subject to change without notice.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

MICROFILM

COMPACT DISC PLAYER

SONY®

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SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

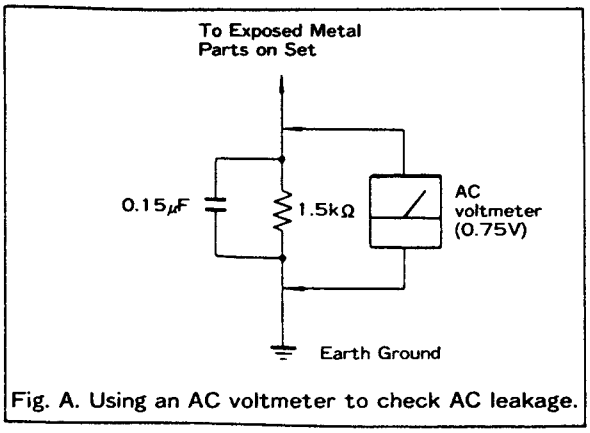


Fig. A. Using an AC voltmeter to check AC leakage.

SERVICING NOTE

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic breakdown because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic breakdown and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to follow carefully the instructions below when servicing.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

1. Laser Diode Properties
   - Material: GaAlAs
   - Wavelength: 780 nm
   - Emission Duration: continuous
   - Laser Output: max. 44.6 μW*

     * This output is the value measured at a distance of about 200 mm from the objective lens surface on the Optical Pick-up Block.

2. During service, do not take the Optical Pick-up Block apart, and do not adjust the APC circuit. If there is a breakdown in the APC circuit (including laser diode), replace the entire Optiocal Pick-up Block (including APC borad).

BESKYTTELSE AF ØJNE MOD LASERSTRÅLING UNDER SERVICE

I dette apparat anvendes laserlys. Derfor skal nedenstående instruktioner nøje følges under service.

Følg iøvrigt instruktionerne i servicemanualen.

ADVARSEL!!

Under service må øjnene ikke komme nær objektiv-linsen på den optiske pick-up enhed. I tilfælde af at det er nødvendigt at kontrollere udsendelsen af laserlys, skal det ske i en afstand af mere end 25 cm fra den optiske pick-up.

1. Laser-didoe data
   - Materiale: GaAlAs
   - Bølgelængde: 780 nm
   - Udstråling: Kontinuerlig
   - Laseroutput: Max. 0,4 mW*

     * Målt i 1,6 mm afstand fra overfladen af objektivlinsen på den optiske pick-up enhed.

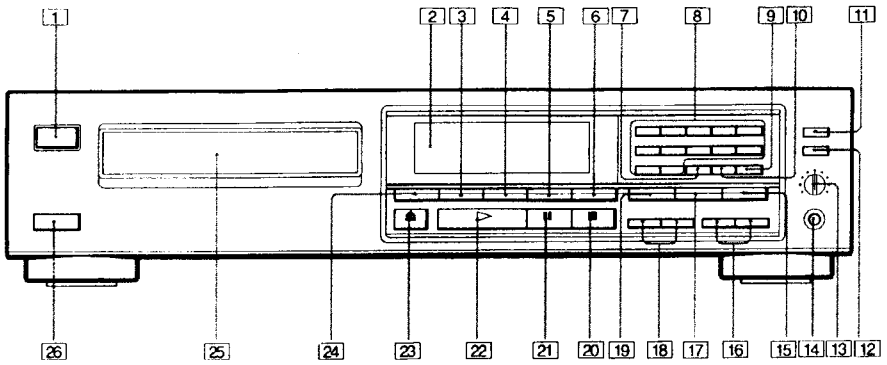
   - Klassifikation: Klasse IIIb.

2. Adskil aldrig den optiske pick-up enhed under service, og juster ikke APC kredsløbet (Automatic Power Control). Hvis APC kredsløbet (incl. laserdioden) bryder ned, skal hele den optiske pick-up enhed (incl. APC printkortet) udskiftes.

SECTION 1
GENERAL

Location of Controls

Front Panel

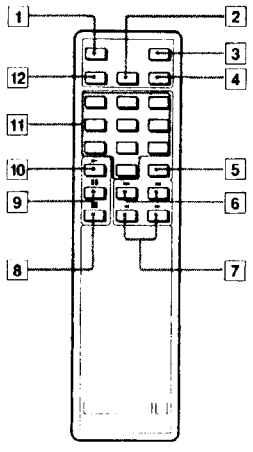


Refer to the pages indicated in ● for details.

1 POWER switch ●
2 Display window
3 TIME button ●
4 AUTO SPACE button ●
5 REPEAT button ●
6 FADER (FADE IN/FADE OUT) button ●
7 CHECK (program check) button ●
8 Numeric buttons ●, ●, ●
9 >12 (over 12) button ●
10 CLEAR (program clear) button ●
11 EDIT/TIME FADE button ●, ●
12 TIME SET button ●, ●
13 PHONE LEVEL control
14 PHONES jack
15 PROGRAM button ●
16 ◀◀ ▶▶ (manual search) buttons ●, ●
17 SHUFFLE button ●
18 ⏮ ⏭ (AMS*/RMS**) buttons ●, ●
19 CONTINUE button ●
20 ■ (stop) button ●
21 ❚❚ (pause) button ●
22 ▶ (play) button ●
23 ⏏ (open/close) button ●
24 PEAK SEARCH button ● (except for AEP model)
25 Disc tray ●
26 Remote sensor ●

* AMS is the abbreviation of Automatic Music Sensor.
** RMS is the abbreviation of Random Music Sensor.

Remote Commander



1 REPEAT button ●
2 SHUFFLE button ●
3 FADER (FADE IN/FADE OUT) button ●
4 PGM (program) button ●
5 >10 (over 10) button ●
6 ⏮ ⏭ AMS buttons ●, ●
7 ◀◀ ▶▶ (manual search) buttons ●, ●
8 ■ (stop) button ●
9 ❚❚ (pause) button ●
10 ▶ (play) button ●
11 Numeric buttons ●, ●, ●
12 CONTINUE button ●

SECTION 2
IC FUNCTION DESCRIPTION

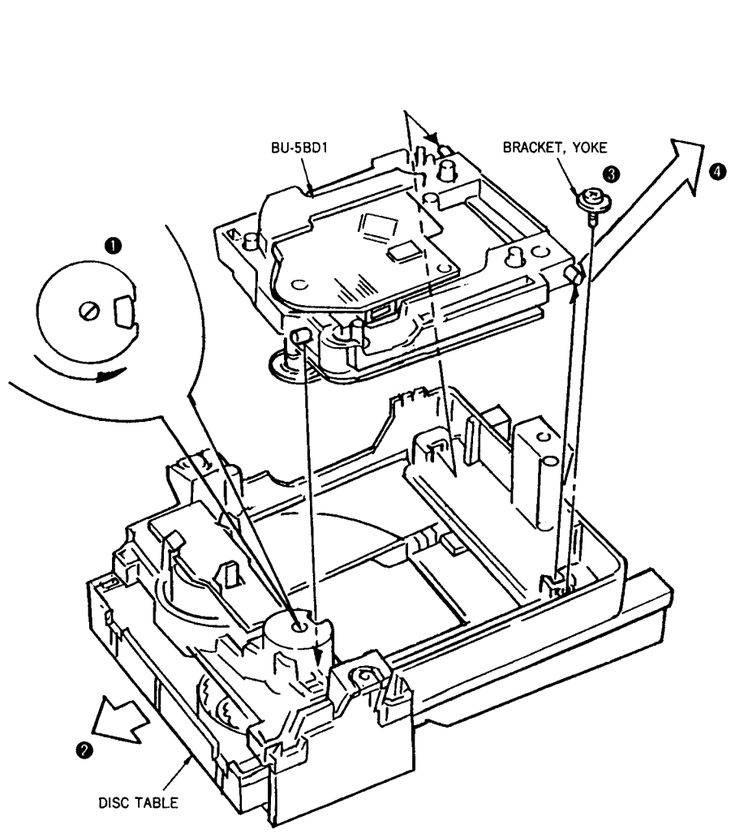
IC101 (CXA1372Q) PIN DESIGNATION

Pin No.	Pin Name	I/O	Pin Description
1	VC		GND when two (±) dual power supplies are in use, or the center voltage (2.5 V) when a single power supply is in use.
2	FGD	I	Time constants for gain switching in normal mode/down mode and for focus gain are connected between the FGD and FS3 pins.
3	FS3	I	
4	FLB	I	The capacitor for low frequency boost in the focus servo loop is connected.
5	FEO	O	Focus drive output
6	FE−	I	Inverted input to focus amplifier
7	SRCH	I	Time constants to generate the focus search waveform are connected.
8	TGU	I	Time constants for gain switching in normal mode/up mode and for tracking gain are connected between TGU pin and TG2 pin.
9	TG2	I	
10	AVCC		Analog power supply (5 V when ± dual power supplies are in use, 5 V when a single power supply is in use.)
11	TAO	O	Tracking drive output
12	TA−	I	Inverted input to tracking amplifier
13	SL+	I	Non-inverted input to sled amplifier
14	SLO	O	Sled drive output
15	SL−	I	Non-inverted input to sled amplifier
16	ESET	I	The 610-kΩ phase compensator resistor is connected to this pin.
17	ISET	I	The current setting resistor is connected to this pin.
18	SSTOP	I	The limit switch is connected to this pin.
19	AVEE		Analog power supply (−5V when ± dual power supplies are in use, or GND when a single power supply is in use.)
20	DIRC	I	Direct control pin.
21	LOCK	I	Sled run-away prevention circuit operates when this signal is "L".
22	CLK	I	Serial data transfer clock input that is supplied from CPU (or DSP).
23	XLT	I	Latch input from CPU (or DSP).
24	DATA	I	Serial data input from CPU (or DSP).
25	XRST	I	System reset. "L" to reset.
26	C.OUT	O	Output to tracking counter.
27	SENS	O	SENS output
28	DGND		Digital ground (GND). (GND when ± dual power supplies are in use. GND when a single power supply is in use.)
29	MIRR	O	Mirror output.
30	DFCT	O	Defect output. "H" when defective.
31	ASY	I	Auto-assymmetry control input.
32	EFM	O	EFM comparator output.
33	FOK	O	Focus OK.
34	CC2	I	Defect-bottom-hold input (input by capacitive coupling).
35	CC1	O	Defect-bottom-hold output.
36	DVCC		Digital power supply (+5 V when ± dual power supplies in use. +5 V when a single power supply is in use.)
37	CB	I	The defect-bottom-hold capacitor is connected to this pin.
38	CP	I	The mirror hold capacitor is connected to this pin.
39	RF1	I	RF signal input (input by capacitive coupling).
40	RF0	I	RF signal input (input by DC coupling).
41	DVEE		Digital power supply (−5 V when ± dual power supplis are in use. GND when a single power supply is in use.)
42	TZC	I	Tracking zero cross comparator input.
43	TE	I	Tracking error input.
44	TDFCT	I	The defect prevention hold capacitor is connected to this pin.
45	ATSC	I	Anti-shock input.
46	FZC	I	Focus zero-cross comparator input.
47	FE	I	Focus error input.
48	FDFCT	I	The defect prevention hold capacitor is connected to this pin.

SECTION 3
DISSASSEMBLY OF BASE UNIT

Note:
Follow the disassembly procedure in the nomerical order given.

❶ Turn the cam to the direction of arrow (Counter clock wise) by minus screw driver.
❷ Take off the disc table.
❸ Remove the bracket yoke.
❹ Remove the MD (BU-5BD1) to the direction of arrow.



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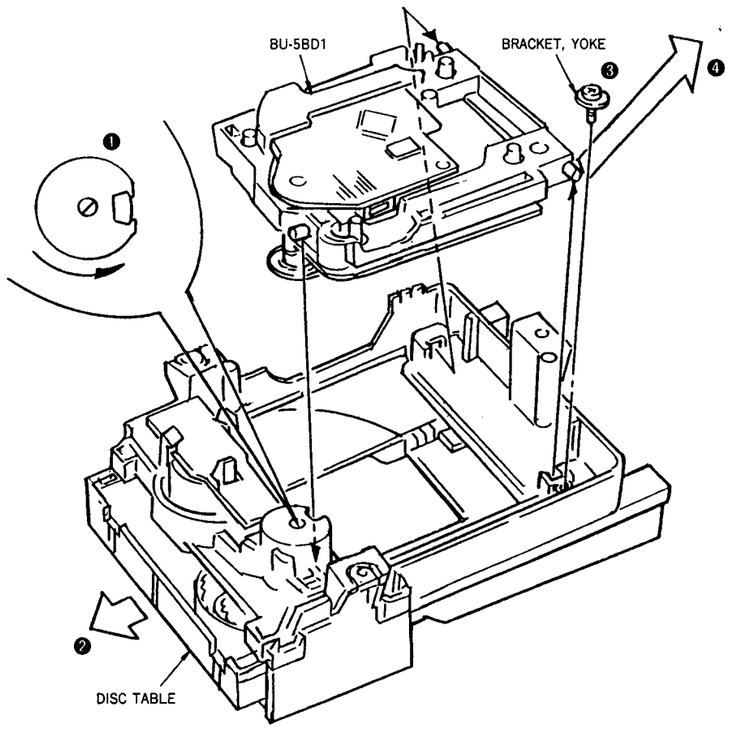


SECTION 4
ADJUSTMENTS

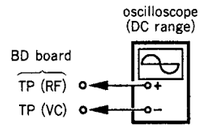
ELECTRICAL ADJUSTMENTS

1. Perform adjustments in the order given.
2. Use YEDS-18 (Part No. 3-702-101-01) disc unless otherwise indicated.
3. Use the oscilloscope with more than 10MΩ impedance.

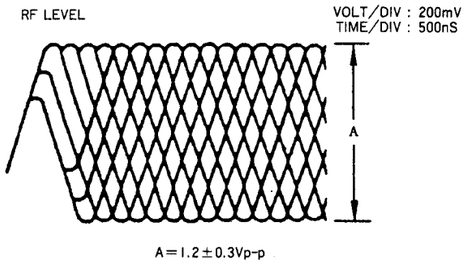
RF LEVEL check

This adjustment should be made after replacing the Optical Pick-up Block.

Procedure:



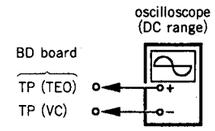
1. Connect oscilloscope to the test points TP (RF) and TP (VC).
2. Turn POWER switch on.
3. Put the disc (YEDS-18) in and press ▷button.
4. Confirm that an optimum waveform eye pattern. Optimum eye pattern means that shape "◇" can be clearly distinguished at the center of the waveform.



E-F Balance Check

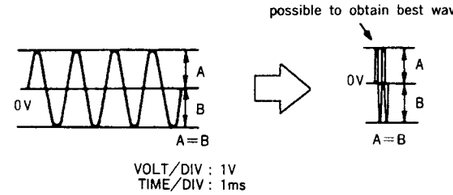
This adjustment should be made after replacing the Optical Pick-up Block.

Procedure:



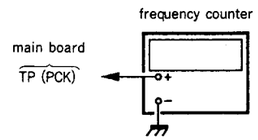
1. Connect the oscilloscope to the test points TP (TEO) and TP (VC).
2. Ground TP (ADJ), TP (TES).
3. Turn POWER switch on.
4. Put the disc (YEDS-18) in and press ▷button.
5. Confirm that the traverse waveform is symmetrical above and below.
6. After adjustment, remove the TP(ADJ), TP(TES) in ground.

NOTE: Take sweep time as long as possible to obtain best waveform.



RF PLL Free-run Frequency Check

Procedure:



1. Connect the frequency counter to the test points TP (PCK) and TP (GND).
2. Turn POWER switch on.
3. Put the disc (YEDS-18) in and press ▷button.
4. Confirm that the reading on the frequency counter is locked at 4.3218 MHz.

Focus/Tracking Gain Adjustment

A frequency response analyzer is necessary in order to perform this adjustment exactly.
However, this gain has a margine, so even if it is slightly off, there is no problem. Therefore, this adjustment is not recomended generally to be performed.

Focus/tracking gains determine the pick-up follow-up (vertical and horizontal) relative to mechanical noise and mechanical shock when the 2-axis device operate.

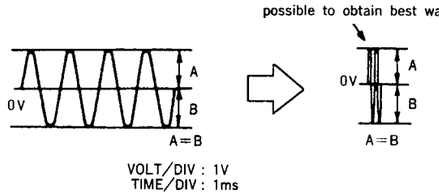
However, as these reciprocate, the adjustment is at the point where both are satisfied.

- When gain is raised, the noise when the 2-axis device operates increases.
- When gain is lowered, it is more susceptible to mechanical shock and skipping occurs more easily.
- When gain adjustment is off, the symptoms below appear.

SECTION 4
ADJUSTMENTS

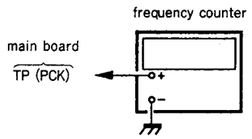
4. Put the disc (YEDS-18) in and press ▷ button.
5. Confirm that the traverse waveform is symmetrical above and below.
6. After adjustment, remove the TP(ADJ), TP(TES) in ground.

NOTE: Take sweep time as long as possible to obtain best waveform.



RF PLL Free-run Frequency Check

Procedure:



1. Connect the frequency counter to the test points TP (PCK) and TP (GND).
2. Turn POWER switch on.
3. Put the disc (YEDS-18) in and press ▷ button.
4. Confirm that the reading on the frequency counter is locked at 4.3218 MHz.

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A frequency response analyzer is necessary in order to perform this adjustment exactly.
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Focus/tracking gains determine the pick-up follow-up (vertical and horizontal) relative to mechanical noise and mechanical shock when the 2-axis device operate.

However, as these reciprocate, the adjustment is at the point where both are satisfied.

- When gain is raised, the noise when the 2-axis device operates increases.
- When gain is lowered, it is more susceptible to mechanical shock and skipping occurs more easily.
- When gain adjustment is off, the symptoms below appear.

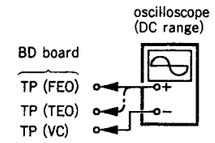
Gain / Symptoms	Focus	Tracking
● The time until music starts becomes longer for STOP →▷PLAY or automatic selection (⏮ ⏭ buttons) pressed. (Normally takes about 2 seconds.)	low	low or high
● Music does not start and disc continues to rotate for STOP →▷PLAY or automatic selection (⏮ ⏭ buttons pressed.)	—	low
● Sound is interrupted during PLAY. Or time counter display stops progressing.	—	low
● More noise during 2-axis device operation.	high	high

The following is a simple adjustment method.

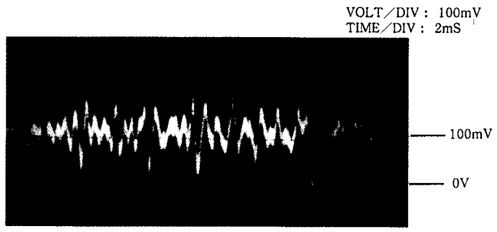
Simple Adjustment

Note: Since exact adjustment cannot be performed, remember the positions of the controls before performing the adjustment. If the positions after the simple adjustment are only a little different, return the controls to the original position.

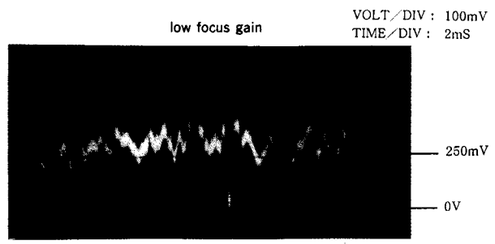
Procedure:

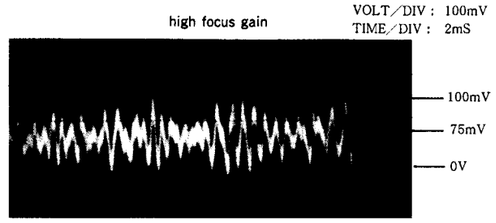


1. Keep the set flat.
   If the set is not horizontal, this adjustment cannot be performed due to the gravity against the 2 axis device.
2. Insert the disc (YEDS-18) and press ▷ PLAY button.
3. Connect the oscilloscope to TP (FEO) and TP (VC).
4. Adjustment RV102 so that the waveform is as shown in the picture below. (focus gain adjustment)



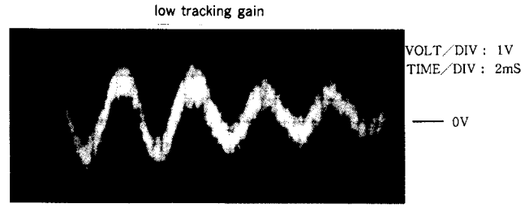
- Incorrect Examples (DC level is quite different from the adjusted waveform) (below)

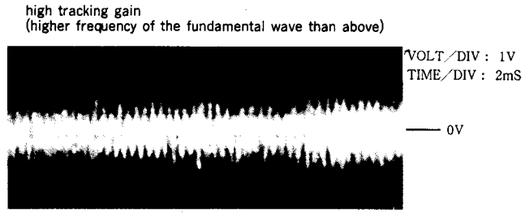




5. Connect the oscilloscope to BD BOARD, TP (TEO).
6. Adjust RV101 so that the waveform is as shown in the picture below. (tracking gain adjustment)

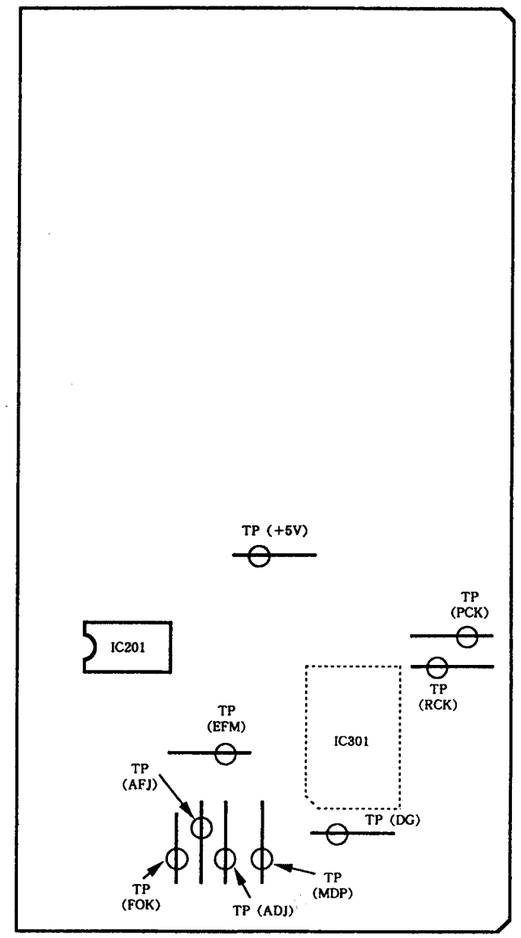
- Incorrect Examples (fundamental wave appears)



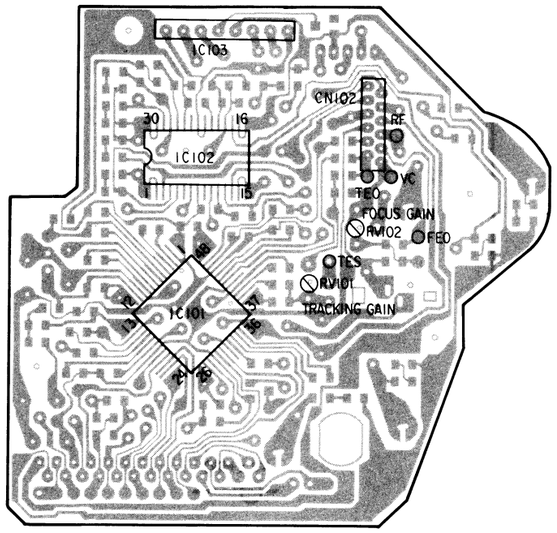


- **Adjustment Location :**

MAIN BOARD (Component side)



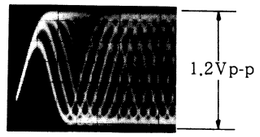
BD BOARD (Component side)



SECTION 5
DIAGRAMS

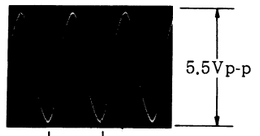
5-1. WAVEFORMS

1 MODE : PLAY



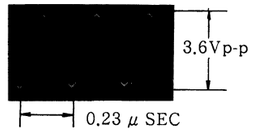
IC101 ㊵ RFO

2 MODE : STOP



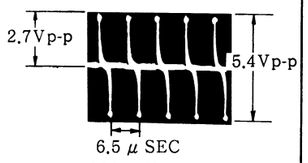
IC401 ㊼ X2

3 MODE : STOP



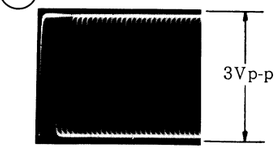
IC401 ㊻ X1

4 MODE : PLAY



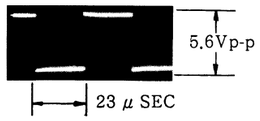
IC301 ④ MDP

5 MODE : PLAY



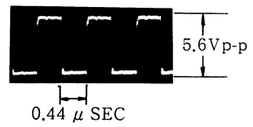
IC301 ㉔ EFM

6 MODE : STOP



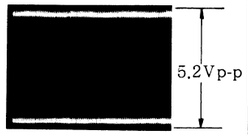
IC301 ㉜ LRCK

7 MODE : STOP



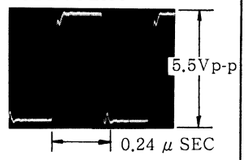
IC301 ㉟ BCLK

8 MODE : PLAY



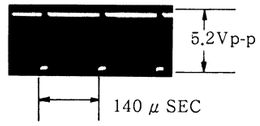
IC302 ⑦ DATA
IC301 ㉞ DATA

9 MODE : PLAY



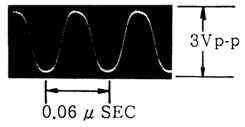
IC301 ㊶ PLCK

10 MODE : STOP



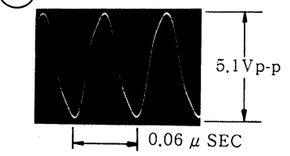
IC301 ㊻ MNT3

11 MODE : STOP



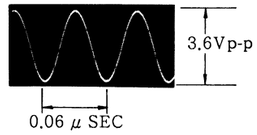
IC301 ㊸ XTAI

12 MODE : STOP



IC302 ③ XOUT

13 MODE : STOP

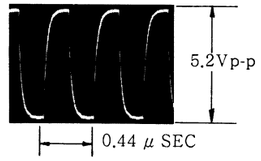


IC302 ④ X IN

14 MODE : STOP

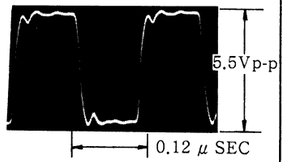
IC302 ⑧ LRCK

15 MODE : STOP



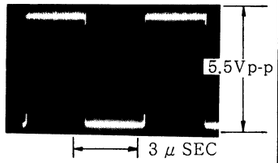
IC302 ⑥ BCK

16 MODE : STOP



IC302 ⑬ BCK

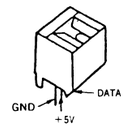
17 MODE : STOP



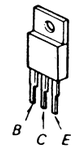
IC302 ⑰ LRCK

● Semiconductor Lead Layouts

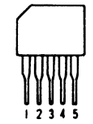
GP1U52XB



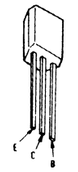
2SB1094-L



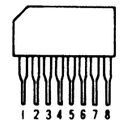
M5293L



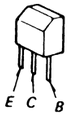
2SC2458-YGR



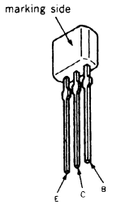
M54641L



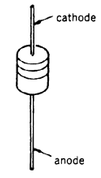
2SD774-34



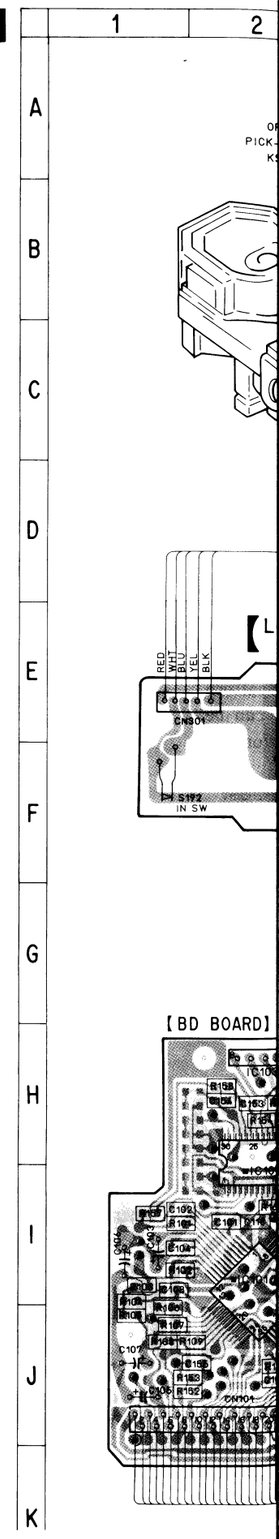
2SA1175-HFE



11ES2
1SS202-1
HZS9B2L
RD6.2ES-B2
RD6.3ES-L3
RD8.2ES-B2



5-2. PRINTED WIRIN

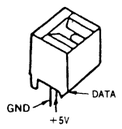


ION 5
RAMS

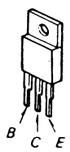
5.6Vp-p CLK	(13) MODE : STOP 3.6Vp-p 0.06 μ SEC IC302 ④ X IN
5.2Vp-p TA TA	(14) MODE : STOP 5.2 Vp-p 24 μ SEC IC302 ⑧ LRCK
5.5Vp-p .24 μ SEC CK	(15) MODE : STOP 5.2Vp-p 0.44 μ SEC IC302 ⑥ BCK
5.2Vp-p SEC NT3	(16) MODE : STOP 5.5Vp-p 0.12 μ SEC IC302 ⑬ BCK
3Vp-p AI	(17) MODE : STOP 5.5Vp-p 3 μ SEC IC302 ⑰ LRCK
5.1Vp-p μ SEC T	

● Semiconductor Lead Layouts

GP1U52XB

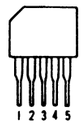


2SB1094-L



2SC2458-YGR

M5293L



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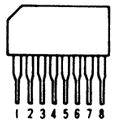
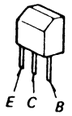
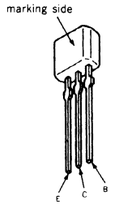


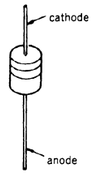
2SD774-34



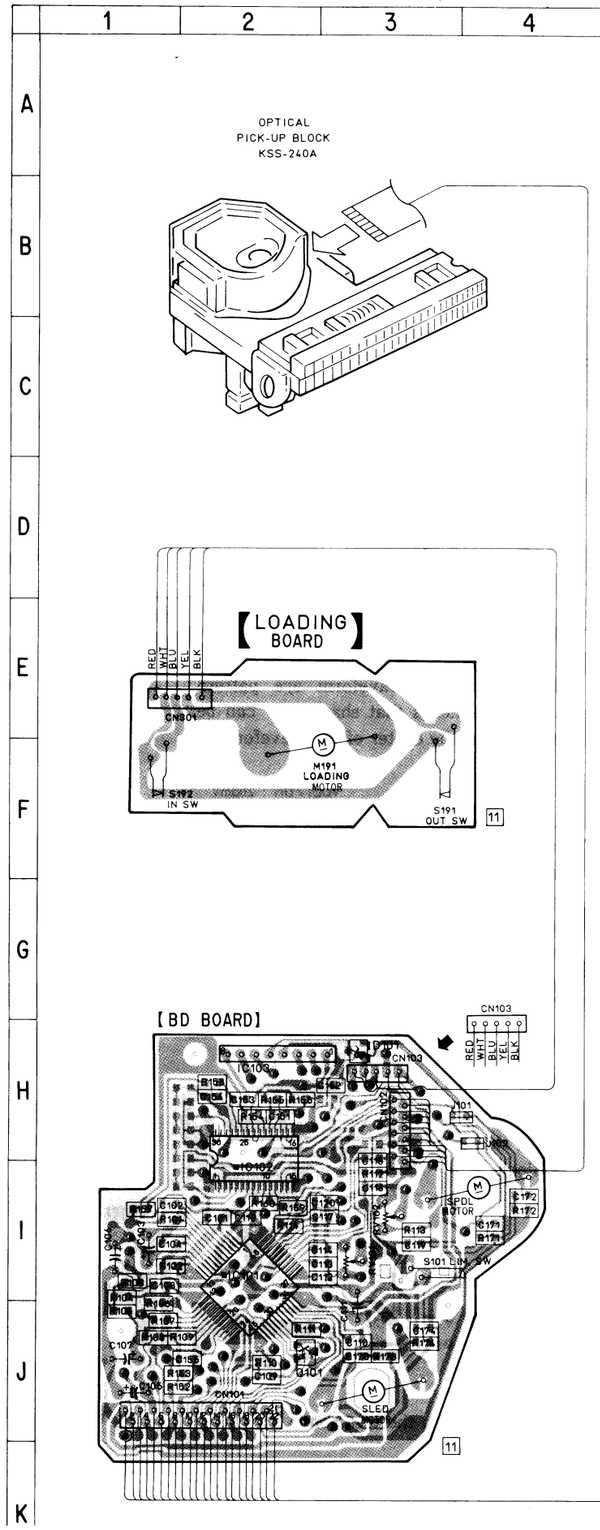
2SA1175-HFE



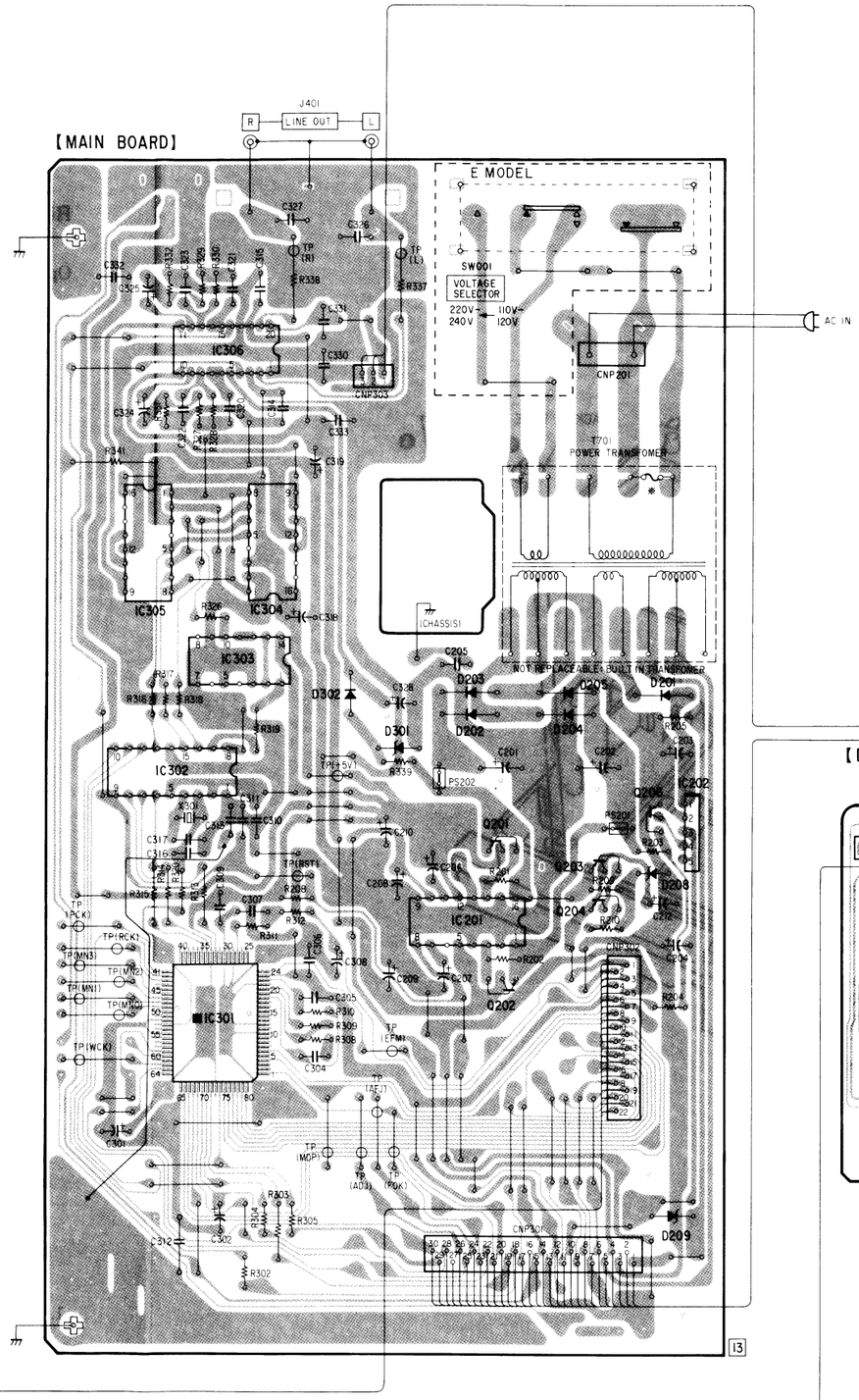
11ES2
1SS202-1
HZS9B2L
RD6.2ES-B2
RD6.3ES-L3
RD8.2ES-B2



5-2. PRINTED WIRING BOARDS



【MAIN BOARD】



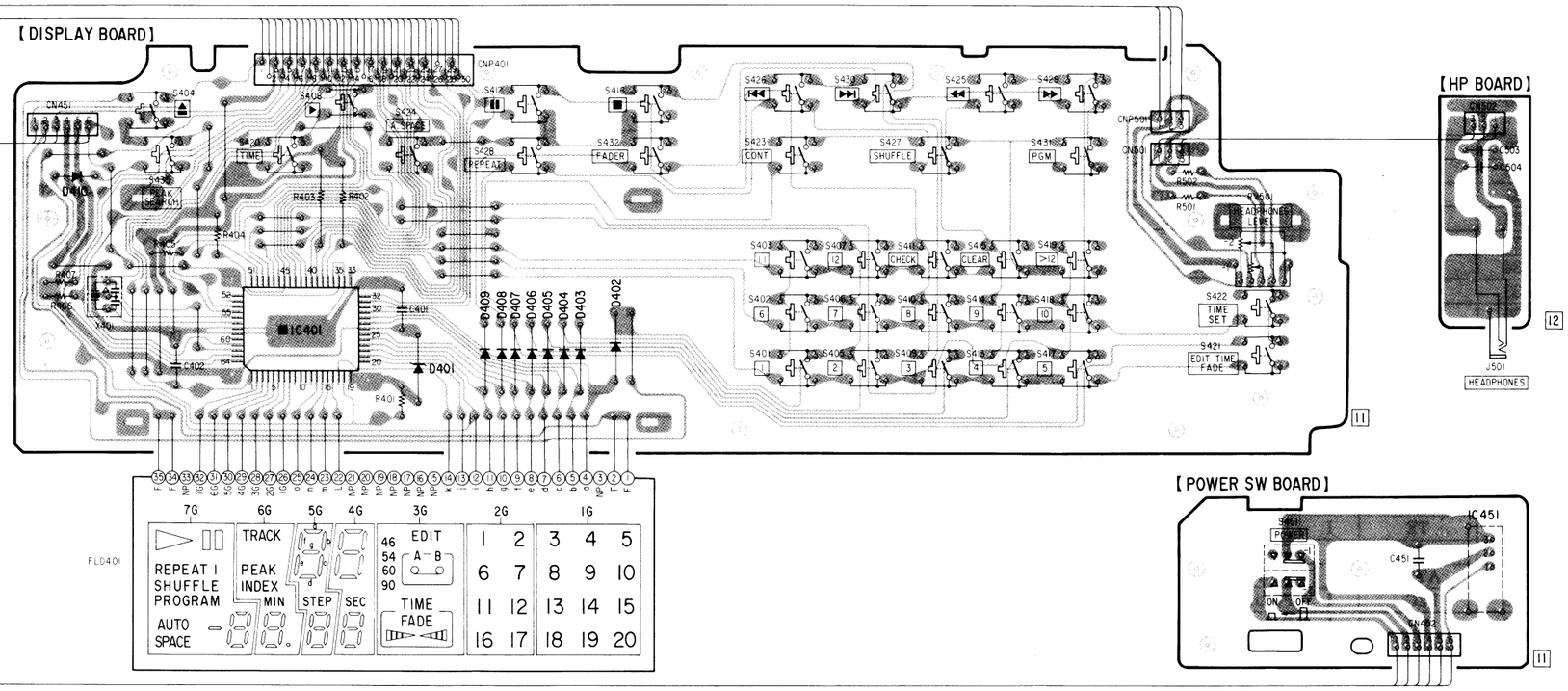
Note:

- ○—— : parts extracted from the component side.
- ■ : parts mounted on the conductor side.
- ● : Through hole.
- ▒ : Pattern on the side which is seen.
- ▒ : Pattern of the rear side.

● Semiconductor Locations

Ref. No.	Location	Ref. No.	Location
D101	H-3	IC101	I-2
D201	F-9	IC102	H-2
D202	F-8	IC103	H-2
D203	F-8	IC201	G-8
D204	F-9	IC202	G-10
D205	F-9	IC301	H-6
D208	G-8	IC302	F-6
D209	J-9	IC303	F-6
D301	F-8	IC304	E-7
D302	F-7	IC305	E-6
D401	I-14	IC306	C-6
D402	I-15	IC401	H-13
D403	I-15	IC451	J-22
D404	I-15		
D405	I-15	Q101	J-2
D406	I-15	Q201	G-8
D407	I-14	Q202	H-8
D408	I-14	Q203	G-9
D409	I-14	Q204	G-9
D410	G-11	Q206	G-9

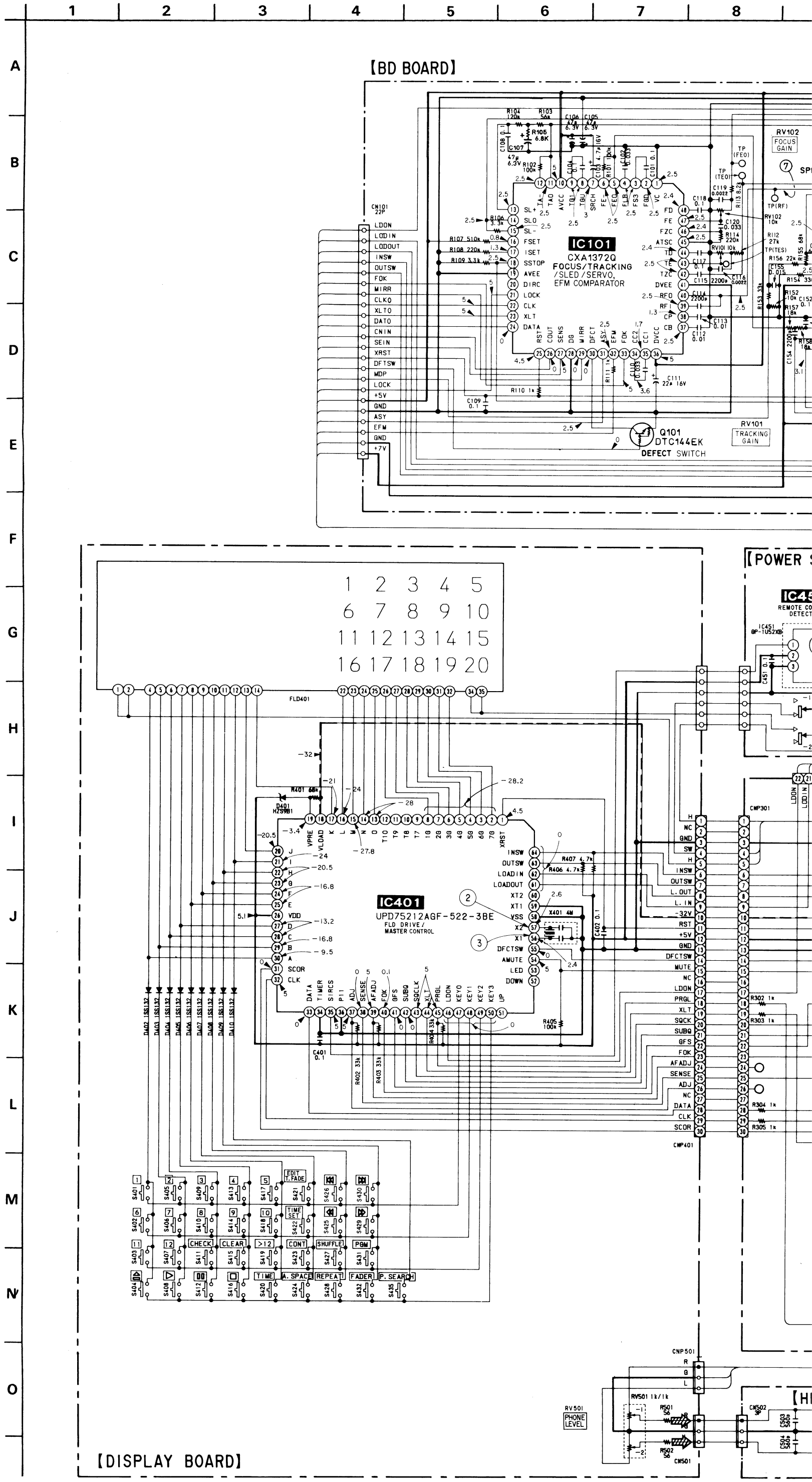
【DISPLAY BOARD】



【HP BOARD】

【POWER SW BOARD】

5-3. SCHEMATIC DIAGRAM



8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19

OPTICAL PICK-UP BLOCK
(KSS-240A) ⚠

CN102 12P
VC
FE
TE
RFO
FZC
VCC
GND
LDON
T-
F+
F-
T+

FOCUS COIL
TRACKING COIL
SPINDLE MOTOR
SLED MOTOR
LIMIT IN SW

M52103FP
12 TE
11 VC
10 VR
9 F-
8 FO
7 EO
6 DO
5 CO
4 BO
3 AO
2 PD
1 LD
13 FE
14 FZC
15 FA+
16 FA-
17 FBO
18 RFO
19 RF-
20 VREF
21 FB
22 GND
23 LDON
24 VCC

IC102
LA6532M
FOCUS/TRACKING COIL DRIVE, SPINDLE/SLED MOTOR DRIVE

RV102 FOCUS GAIN
TP(FEO)
TP(RF)
TP(TES)
TP(VC)
RESET
NC
VCC

IC103
M54641L
LOADING MOTOR DRIVE

RV101 TRACKING GAIN
D101 RD4.7M-B1

【LOADING BOARD】

CN103 5P
OUTSW
GND
INSW
LOAD
LOAD

CN301
S191 LOAD OUT SW
S192 LOAD IN SW
M191 LOADING MOTOR

【POWER SW BOARD】

IC451
REMOTE CONTROL DETECTOR
IC451 6P-TU52XB
S451 POWER ON OFF

CMP301
CMP302
LDON LODIN LODOUT INSW OUTSW FOK MIRR CLKO XLTO DATO CNIN SENS XRST DFCTSW MDP LOCK +5V GND ASY EFM GND +8V

【MAIN BOARD】

※ NOT REPLACEABLE: BUILT

IC202 REG
D209 RD6.8ES-B
IC202 M5293L
Q206 2SA1048
Q202 2SD774
R203 56k
PS201 ICP-N25
D205 D204 D203 D202 11ES2
IC205 M5290P-16
PS202 ICP-N25
Q201 2SB1274 REG

IC201 REG

R208 3.3k
D208 RD8.2ES
R209 1k
R210 1k
Q204 2SC2458
C212 220/16
Q203 2SB1274
Q203, 204 REG
C332 0.1

SW
EFM
ASY
RST
+5V
GND
-32
5.1
-5.1

IC304
IC305
IC304,305 PCM56P D/A CONVERTER

IC303
IC303 MC74HCU04N INVERTER

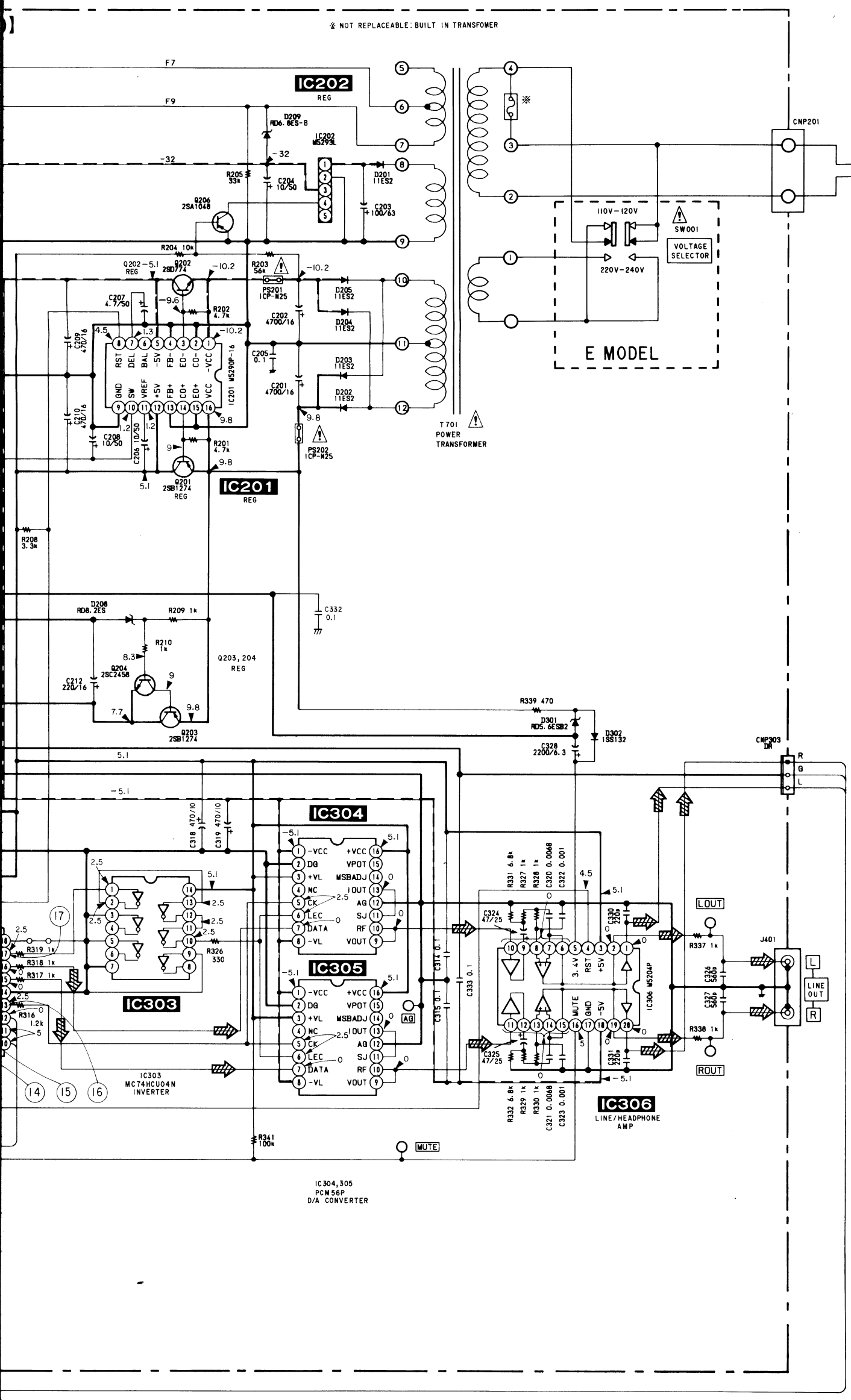
IC302
DIGITAL FILTER
IC302 CXD2551P

IC301
CXD2500Q
DIGITAL SIGNAL PROCESSOR /CLV SERVO

MDP
MUTE

【HP BOARD】

CN502 3P
J501 PHONES



Note:

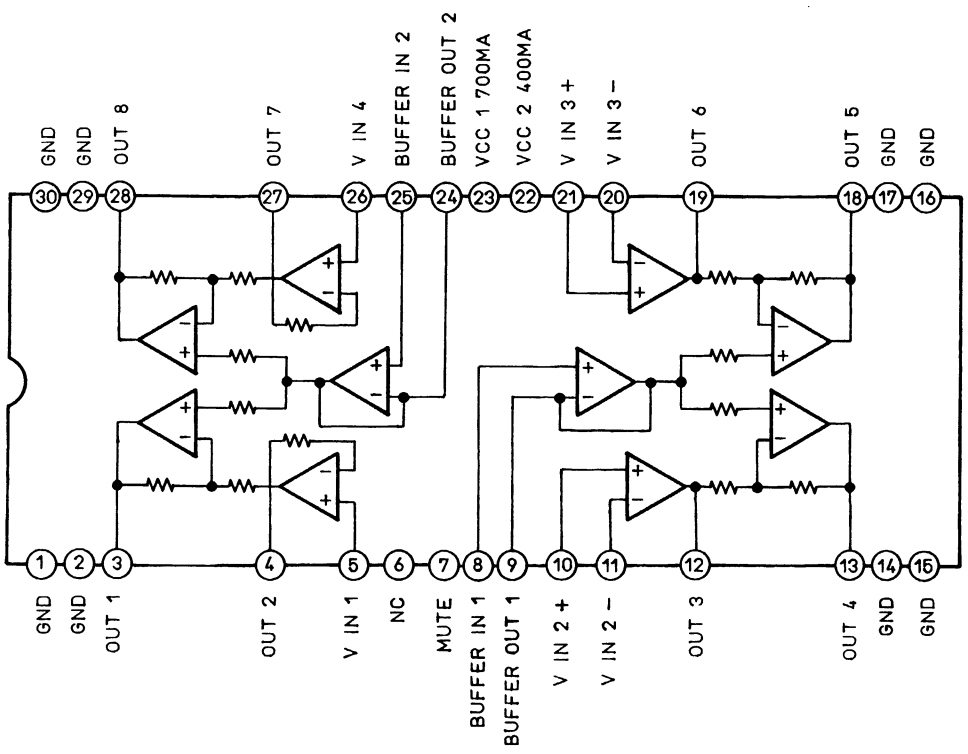
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- % : indicates tolerance.
- △ : internal component.

Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

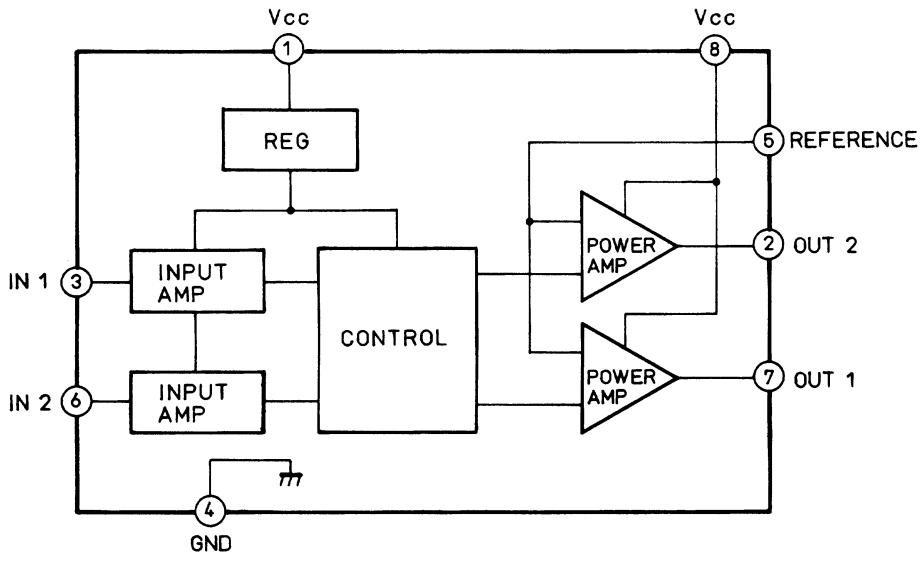
- ▬▬ : B+ Line
- ▬ ▬ : B− Line
- ▭ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : STOP
- Voltages are taken with a VOM (Input Impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope.
  Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : CD

5-4. IC BLOCK DIAGRAMS

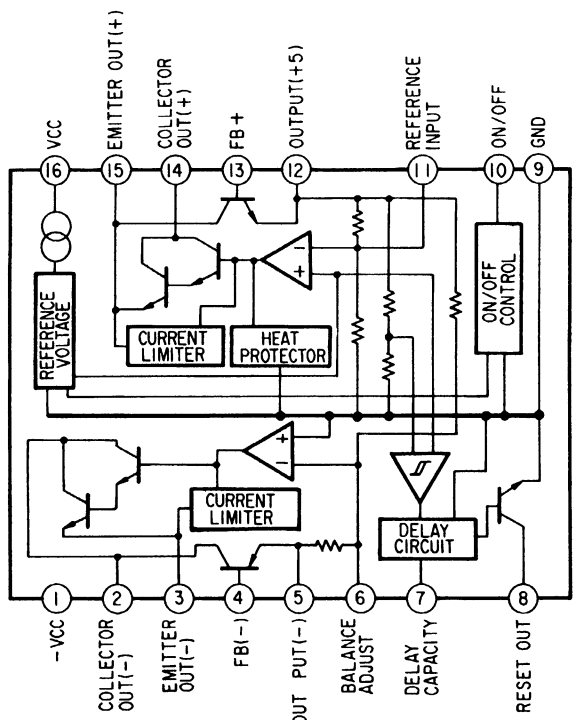
IC102
LA6532M



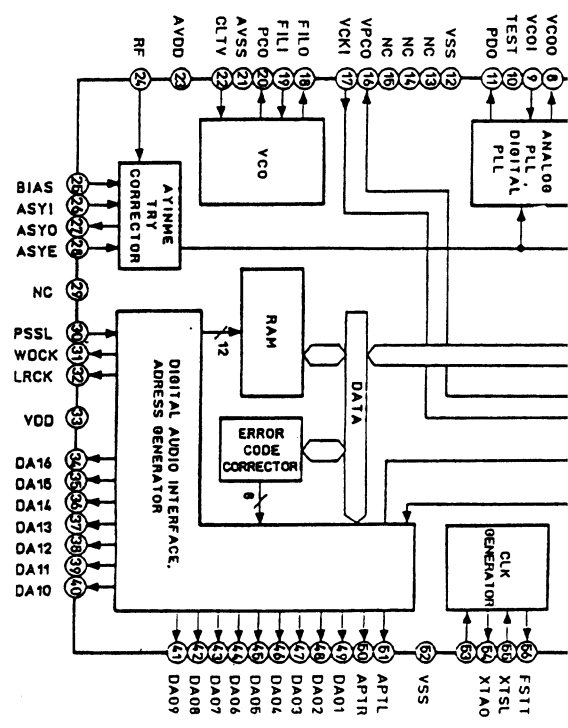
IC103
M54641L



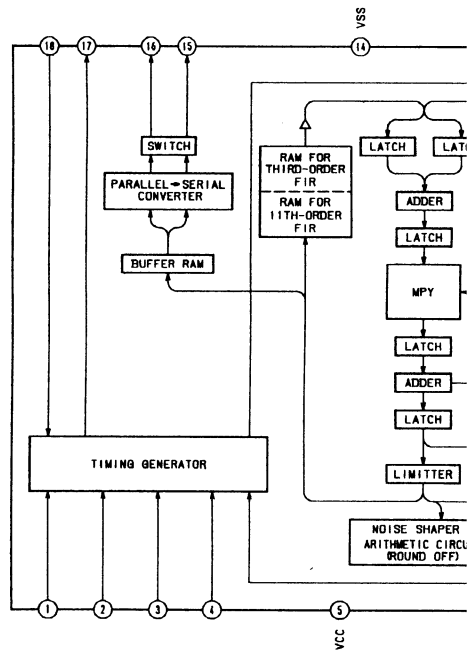
IC201
M5290P-16



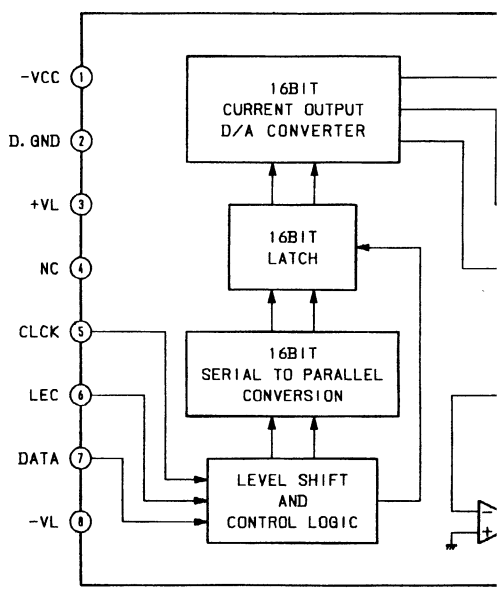
IC301
CXD2500Q

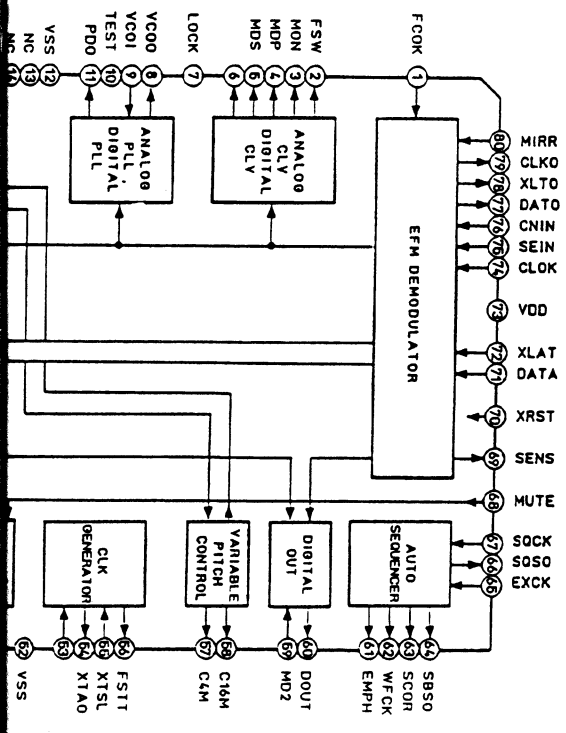


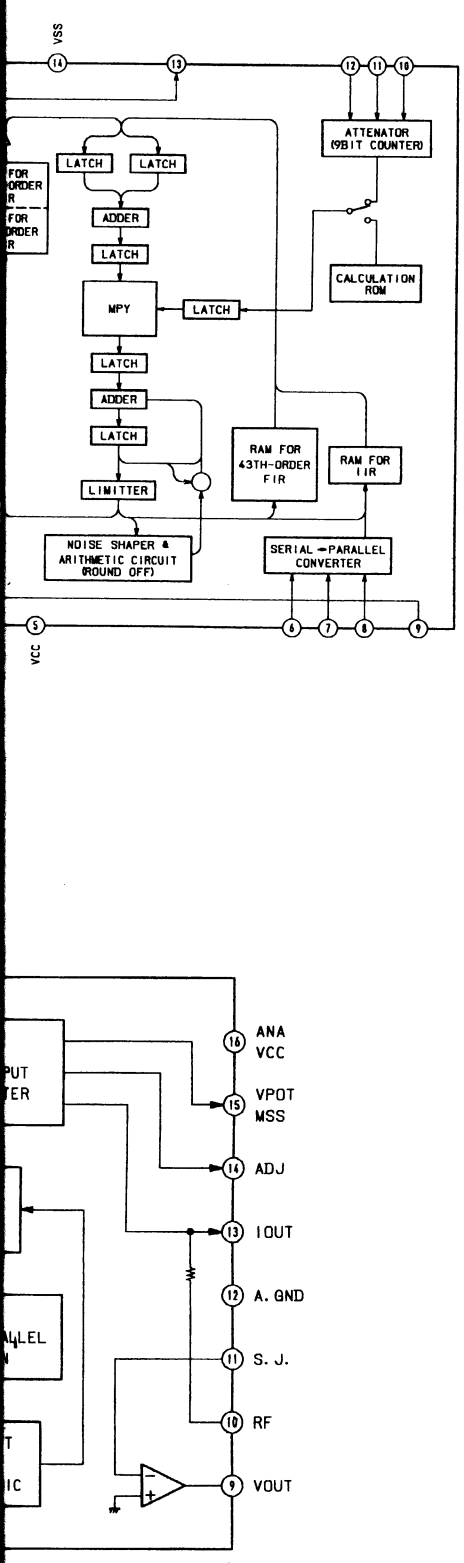
IC302
CXD2551P



IC304, 305
PCM56







SECTION 6
EXPLODED VIEWS

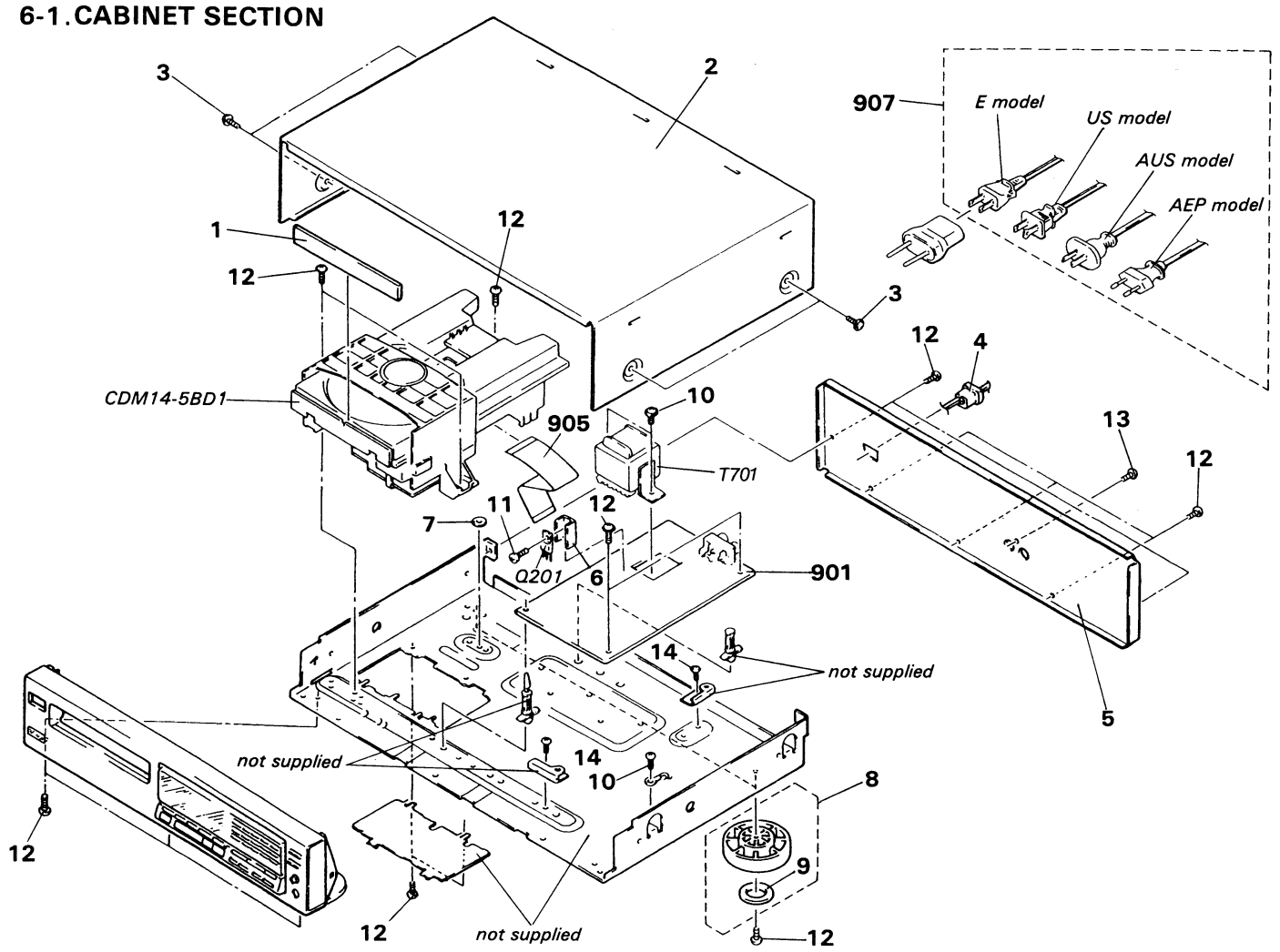
NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
  Example:
  (RED) . . . KNOB, BALANCE (WHITE)
  ↑ ↑
  Cabinet's Color Parts' Color

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifé.

6-1. CABINET SECTION



No.	Part No.	Description	Remarks
1	4-933-208-03	(E,AEP,AUS)...PANEL, LOADING	
	4-933-208-51	(US).....PANEL, LOADING	
2	4-929-035-31	CASE	
3	3-704-366-31	SCREW (CASE) (M3X6)	
4	*3-703-244-00	(US,AEP,AUS)...BUSHING (2104), CORD	
	*3-703-571-11	(E).....BUSHING (S)(4516), CORD	
5	*4-933-201-11	(US)....PANEL, BACK	
	*4-933-201-31	(AEP)...PANEL, BACK	
	*4-933-201-41	(E).....PANEL, BACK	
	*4-933-201-91	(AUS)...PANEL, BACK	
6	4-902-345-01	HEAT SINK	
7	*4-933-220-01	SPACER (MD)	
8	X-3304-938-2	(E,AEP,AUS)...FOOT ASSY	9
	X-4885-950-1	(US).....FOOT ASSY	9

No.	Part No.	Description	Remarks
9	4-923-836-11	CUSHION	
10	2-383-566-00	SCREW	
11	7-682-547-09	SCREW +B 3X6	
12	7-682-548-09	SCREW +BVTT 3X8 (S)	
13	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
14	7-682-547-04	SCREW +BVTT 3X6 (S)	
901	*A-4617-315-A	(E).....MOUNTED PCB, MAIN	
	*A-4617-494-A	(US,AEP,AUS)...MOUNTED PCB, MAIN	
905	1-575-002-11	WIRE, FLAT TYPE (22 CORE)	
907	⚠1-575-104-11	(E).....CORD, POWER	
	⚠1-575-105-11	(US)....CORD, POWER	
	⚠1-575-453-11	(AEP)...CORD, POWER	
	⚠1-575-677-11	(AUS)...CORD, POWER	
908	⚠1-526-565-00	(E)...AC PLUG ADAPTOR	
Q201	8-729-111-67	TRANSISTOR 2SB1094-L	
T701	⚠1-449-921-11	(US).....TRANSFORMER, POWER	
T701	⚠1-449-922-11	(AEP,AUS)...TRANSFORMER, POWER	
T701	⚠1-449-923-11	(E).....TRANSFORMER, POWER	

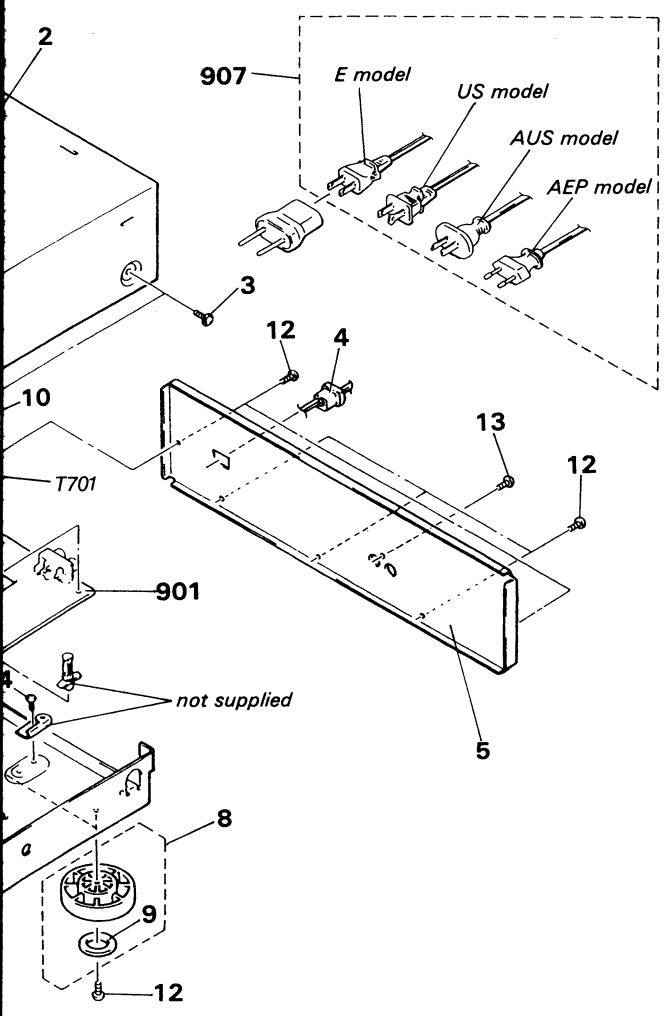
ON 6
VIEWS

ation, parts with part
X and -X may be dif-
parts specified in the
on the set.

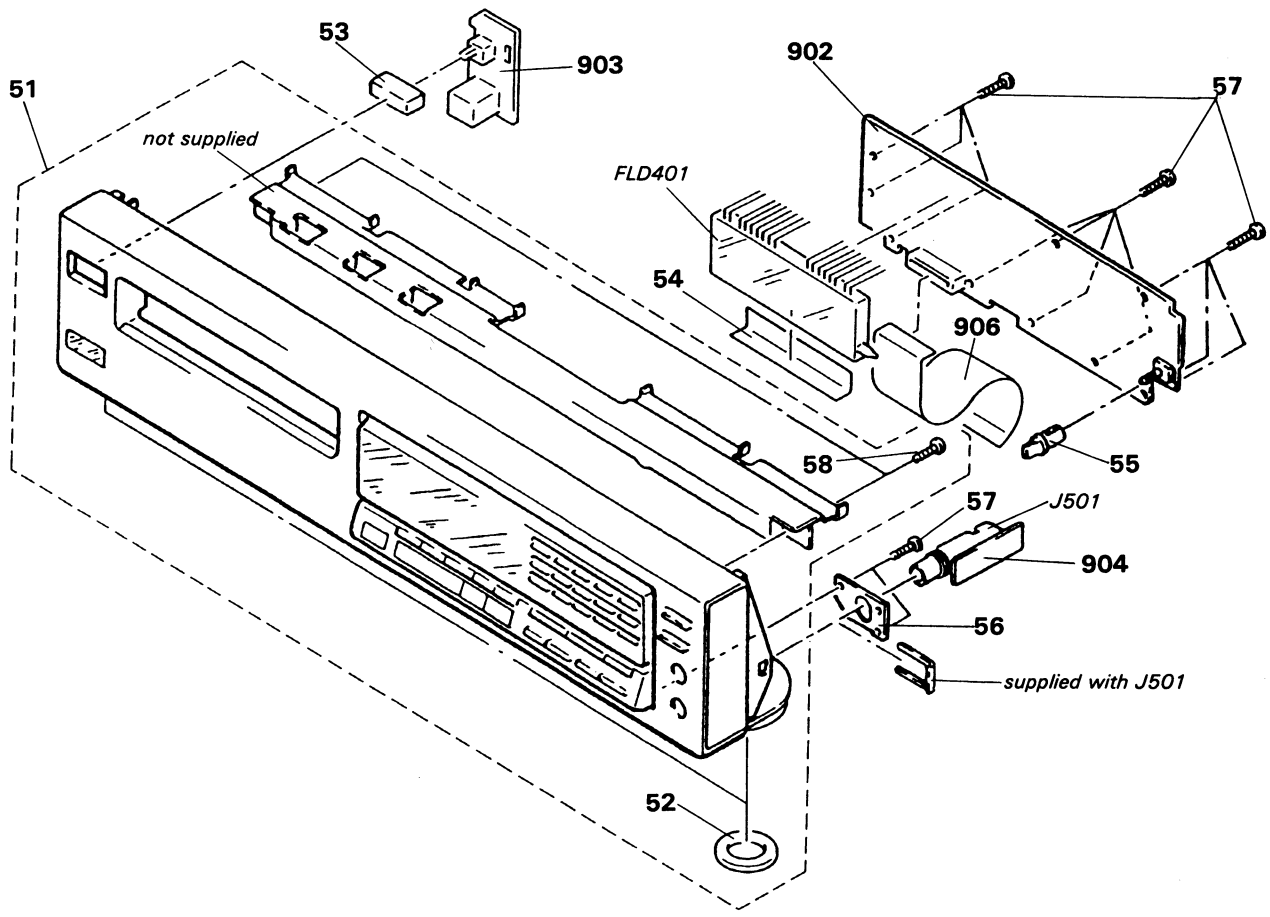
of Appearance Parts

, BALANCE (WHITE)
↑
Parts' Color

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifé.



6-2. FRONT PANEL SECTION

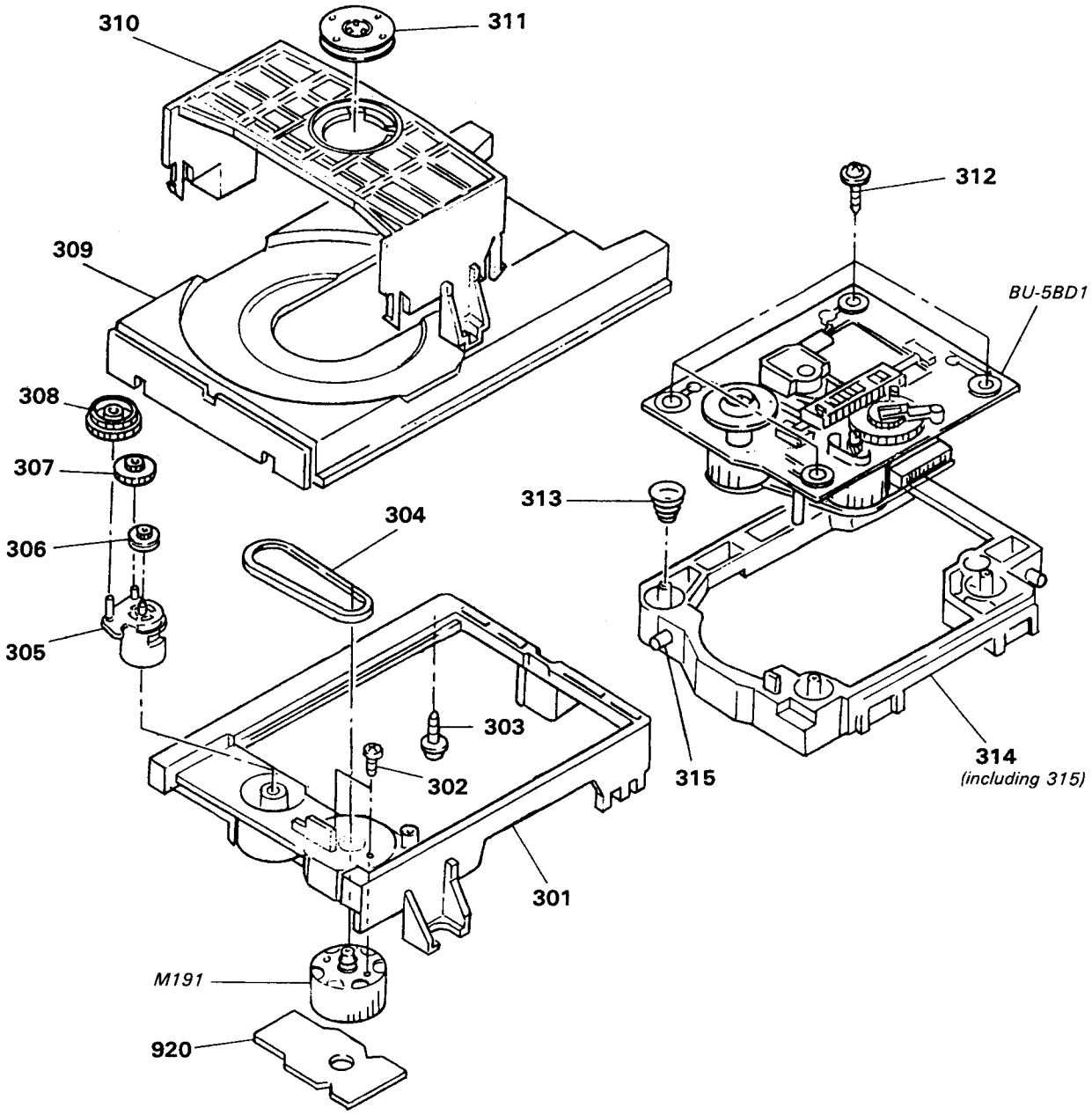


No.	Part No.	Description	Remarks
9	4-923-836-11	CUSHION	
10	2-383-566-00	SCREW	
11	7-682-547-09	SCREW +B 3X6	
12	7-682-548-09	SCREW +BVTT 3X8 (S)	
13	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
14	7-682-547-04	SCREW +BVTT 3X6 (S)	
01	*A-4617-315-A	(E).....MOUNTED PCB, MAIN	
	*A-4617-494-A	(US,AEP,AUS)...MOUNTED PCB, MAIN	
05	1-575-002-11	WIRE, FLAT TYPE (22 CORE)	
07	⚠.1-575-104-11	(E).....CORD, POWER	
	⚠.1-575-105-11	(US)....CORD, POWER	
	⚠.1-575-453-11	(AEP)...CORD, POWER	
	⚠.1-575-677-11	(AUS)...CORD, POWER	
08	⚠.1-526-565-00	(E)...AC PLUG ADAPTOR	
201	8-729-111-67	TRANSISTOR 2SB1094-L	
701	⚠.1-449-921-11	(US).....TRANSFORMER, POWER	
701	⚠.1-449-922-11	(AEP,AUS)...TRANSFORMER, POWER	
701	⚠.1-449-923-11	(E).....TRANSFORMER, POWER	

No.	Part No.	Description	Remarks
51	X-4604-397-1	(AEP).....PANEL ASSY, FRONT	52,58
	X-4604-404-1	(E,AUS)...PANEL ASSY, FRONT	52,58
	X-4933-214-1	(US).....PANEL ASSY, FRONT	52,58
52	4-923-836-11	CUSHION	
53	4-922-921-01	BUTTON (POWER)	
54	*4-927-353-01	SHEET (FL)	
55	4-933-116-11	KNOB (C, TYPE), LOV	
56	*4-933-204-01	BRACKET (H.P)	

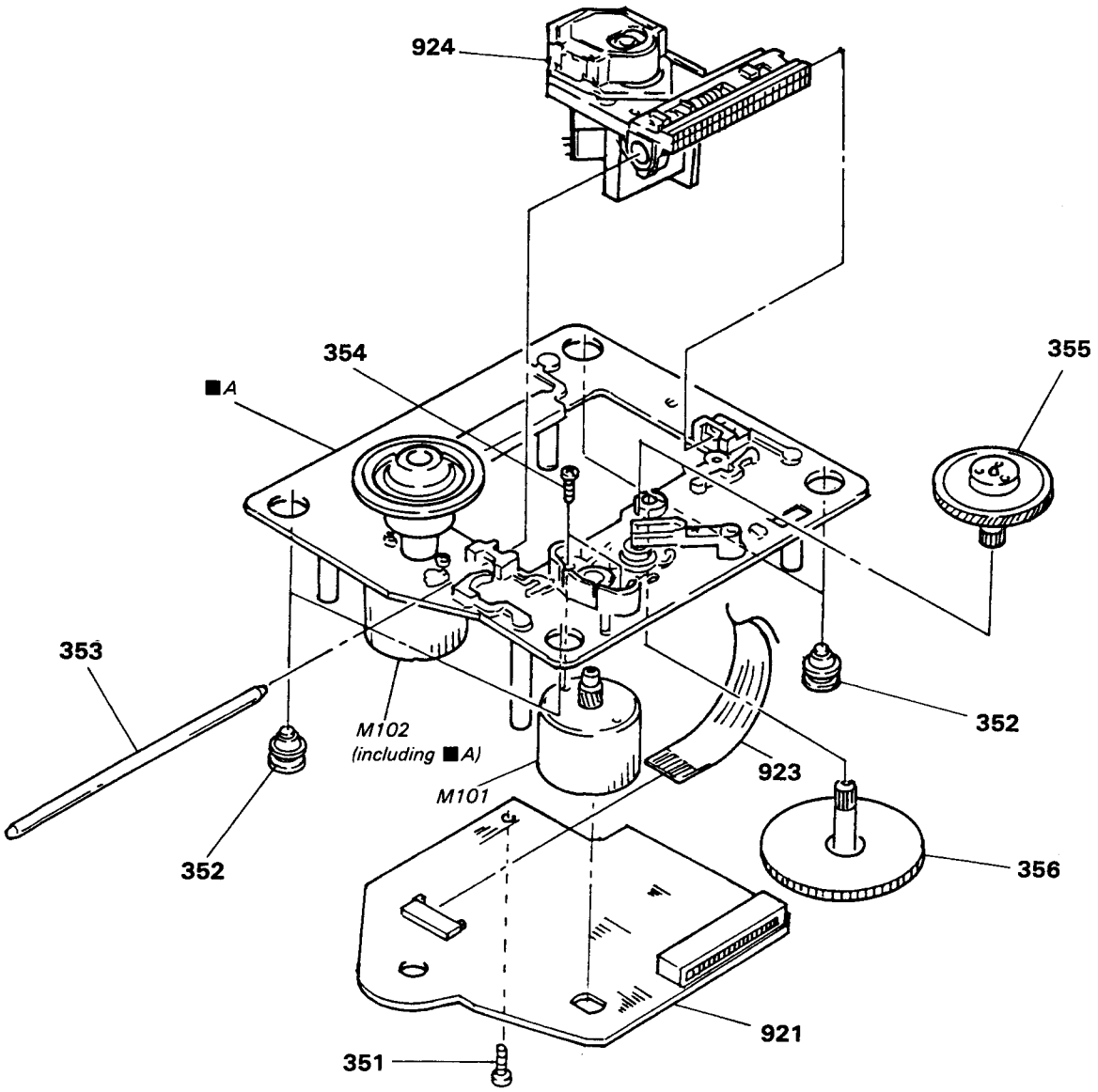
No.	Part No.	Description	Remarks
57	4-928-635-01	SCREW, +BV (2.6X8) TAPPING	
58	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S	
902	*1-632-243-11	PC BOARD, DISPLAY	
903	*1-632-245-11	PC BOARD, POWER SW	
904	*1-632-244-11	PC BOARD, HP	
906	1-575-120-11	WIRE, FLAT TYPE (30 CORE)	
FLD401	1-519-556-11	INDICATOR TUBE, FLUORESCENT	
J501	1-568-519-21	JACK, LARGE TYPE	

6-3.MD SECTION-1 (CDM14-5BD1)



No.	Part No.	Description	Remarks
301	4-933-111-01	CHASSIS (MD)	
302	7-621-775-10	SCREW +B 2.6X4	
303	*4-917-583-21	BRACKET, YOKE	
304	4-927-649-01	BELT	
305	4-933-109-01	CAM	
306	4-927-651-01	PULLEY (S)	
307	4-927-628-01	GEAR (C)	
308	4-933-107-01	GEAR (PL)	
309	4-933-112-01	TABLE, DISK	
310	4-933-110-01	HOLDER (MG)	
311	A-4675-347-A	MG ASSY	
312	4-933-134-01	SCREW (+PTPWH M2.6X6)	
313	4-917-541-01	SPRING (B)	
314	4-933-129-01	HOLDER (BU)	
315	4-933-108-01	SHAFT (CAM)	
M191	A-4604-363-A	MOTOR (L) ASSY	
920	*1-632-202-11	PC BOARD, LOADING	

6-4. MD SECTION-2 (BU-5BD1)



Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

No.	Part No.	Description	Remarks
351	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S	
352	4-933-126-01	INSULATOR (A)	
353	4-917-565-01	SHAFT, SLED	
354	7-621-255-15	SCREW +P 2X3	
355	4-917-567-01	GEAR (M)	
356	4-917-564-01	GEAR (P), FLATNESS	

No.	Part No.	Description	Remarks
921	*A-4617-161-A	MOUNTED PCB, BD	
923	1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
924	⚠8-848-144-11	DEVICE, OPTICAL KSS-240A	
M101	X-4917-504-1	MOTOR ASSY (SLED)	
M102	X-4917-523-3	MOTOR ASSY (SPINDLE)	

SECTION 7
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA..., UPC...: μPC, UPD...: μPD...

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No.	Part No.	Description		
901	*A-4617-315-A	(E).....MOUNTED PCB, MAIN		
	*A-4617-494-A	(US,AEP,AUS)...MOUNTED PCB, MAIN		
902	*1-632-243-11	PC BOARD, DISPLAY		
903	*1-632-245-11	PC BOARD, POWER SW		
904	*1-632-244-11	PC BOARD, HP		
905	1-575-002-11	WIRE, FLAT TYPE (22 CORE)		
906	1-575-120-11	WIRE, FLAT TYPE (30 CORE)		
907	⚠.1-575-104-11	(E).....CORD, POWER		
	⚠.1-575-105-11	(US)....CORD, POWER		
	⚠.1-575-453-11	(AEP)...CORD, POWER		
	⚠.1-575-677-11	(AUS)...CORD, POWER		
908	.1-526-565-00	(E)...AC PLUG ADAPTOR		
920	*1-632-202-11	PC BOARD, LOADING		
921	*A-4617-161-A	MOUNTED PCB, BD		
923	1-575-001-11	WIRE, FLAT TYPE (12 CORE)		
924	⚠.8-848-144-11	DEVICE, OPTICAL KSS-240A		
C101	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C102	1-163-989-11	CERAMIC CHIP 0.033MF	10%	25V
C103	1-126-094-11	ELECT 4.7MF	20%	16V
C104	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C105	1-126-154-11	ELECT 47MF	20%	6.3V
C106	1-126-154-11	ELECT 47MF	20%	6.3V
C107	1-126-154-11	ELECT 47MF	20%	6.3V
C108	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C109	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C110	1-163-989-11	CERAMIC CHIP 0.033MF	10%	25V
C111	1-131-367-00	TANTALUM 22MF	20%	16V
C112	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C113	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C114	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C115	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C116	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C117	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C118	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C119	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C120	1-163-989-11	CERAMIC CHIP 0.033MF	10%	25V
C151	1-163-019-00	CERAMIC CHIP 0.0068MF	10%	50V
C152	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C153	1-163-006-11	CERAMIC CHIP 560PF	10%	50V
C154	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C155	1-163-023-00	CERAMIC CHIP 0.015MF	10%	50V
C171	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C172	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C173	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C174	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C201	1-126-842-11	ELECT 4700MF	20%	16V
C202	1-126-842-11	ELECT 4700MF	20%	16V
C203	1-126-880-11	ELECT 100MF	20%	63V
C204	1-126-059-11	ELECT 10MF	20%	50V
C205	1-162-851-11	CERAMIC 0.1MF	20%	16V
C206	1-126-059-11	ELECT 10MF	20%	50V
C207	1-124-045-00	ELECT 4.7MF	20%	50V
C208	1-126-059-11	ELECT 10MF	20%	50V
C209	1-126-012-11	ELECT 470MF	20%	16V
C210	1-126-012-11	ELECT 470MF	20%	16V
C212	1-126-024-11	ELECT 220MF	20%	16V
C301	1-124-994-11	ELECT 100MF	20%	10V
C302	1-126-301-11	ELECT 1MF	20%	50V
C304	1-136-161-00	FILM 0.047MF	5%	50V
C305	1-161-374-11	CERAMIC 0.0015MF	30%	16V
C306	1-164-159-11	CERAMIC 0.1MF		50V
C307	1-162-306-11	CERAMIC 0.01MF	20%	16V
C308	1-126-300-11	ELECT 0.47MF	20%	50V
C309	1-164-159-11	CERAMIC 0.1MF		50V
C310	1-164-159-11	CERAMIC 0.1MF		50V
C311	1-164-159-11	CERAMIC 0.1MF		50V
C312	1-164-159-11	CERAMIC 0.1MF		50V
C313	1-164-159-11	CERAMIC 0.1MF		50V
C314	1-164-159-11	CERAMIC 0.1MF		50V
C315	1-164-159-11	CERAMIC 0.1MF		50V
C316	1-162-205-31	CERAMIC 18PF	5%	50V
C317	1-162-205-31	CERAMIC 18PF	5%	50V
C318	1-124-997-11	ELECT 470MF	20%	10V
C319	1-124-997-11	ELECT 470MF	20%	10V
C320	1-130-481-00	MYLAR 0.0068MF	5%	50V
C321	1-130-481-00	MYLAR 0.0068MF	5%	50V
C322	1-130-471-00	MYLAR 0.001MF	5%	50V
C323	1-130-471-00	MYLAR 0.001MF	5%	50V
C324	1-123-332-00	ELECT 47MF	20%	25V
C325	1-123-332-00	ELECT 47MF	20%	25V
C326	1-162-291-31	CERAMIC 560PF	10%	50V
C327	1-162-291-31	CERAMIC 560PF	10%	50V
C328	1-124-893-11	ELECT 2200MF	20%	6.3V
C330	1-162-286-31	CERAMIC 220PF	10%	50V
C331	1-162-286-31	CERAMIC 220PF	10%	50V
C332	1-164-159-11	CERAMIC 0.1MF		50V
C333	1-164-159-11	CERAMIC 0.1MF		50V
C401	1-164-159-11	CERAMIC 0.1MF		50V
C402	1-164-159-11	CERAMIC 0.1MF		50V

Ref.No.	Part No.	Description
C451	1-164-159-11	CERAMIC 0.1MF 50V
C503	1-162-291-31	CERAMIC 560PF 10% 50V
C504	1-162-291-31	CERAMIC 560PF 10% 50V
CN101	1-568-796-11	SOCKET, CONNECTOR 22P
CN102	1-568-795-11	SOCKET, CONNECTOR 12P
CN103	*1-564-721-11	PIN, CONNECTOR (SMALL TYPE) 5P
CN301	*1-564-707-11	PIN, CONNECTOR (SMALL TYPE) 5P
CN502	*1-564-337-00	PIN, CONNECTOR 3P
CNP201	*1-564-321-00	PIN, CONNECTOR 2P
CNP301	*1-568-933-11	SOCKET, CONNECTOR 30P
CNP302	*1-568-822-11	SOCKET, CONNECTOR 22P
CNP303	*1-564-337-61	PIN, CONNECTOR 3P
CNP401	*1-568-933-11	SOCKET, CONNECTOR 30P
D101	8-719-105-72	DIODE RD4.7M-B1
D201	8-719-200-82	DIODE 11ES2
D202	8-719-200-82	DIODE 11ES2
D203	8-719-200-82	DIODE 11ES2
D204	8-719-200-82	DIODE 11ES2
D205	8-719-200-82	DIODE 11ES2
D208	8-719-110-08	DIODE RD8.2ES-B2
D209	8-719-120-90	DIODE RD6.8ES-L3
D301	8-719-123-54	DIODE RD6.2ES-B2
D302	8-719-107-94	DIODE 1SS202-1
D401	8-719-933-57	DIODE HZS9B2L
D402	8-719-107-94	DIODE 1SS202-1
D403	8-719-107-94	DIODE 1SS202-1
D404	8-719-107-94	DIODE 1SS202-1
D405	8-719-107-94	DIODE 1SS202-1
D406	8-719-107-94	DIODE 1SS202-1
D407	8-719-107-94	DIODE 1SS202-1
D408	8-719-107-94	DIODE 1SS202-1
D409	8-719-107-94	DIODE 1SS202-1
D410	8-719-107-94	DIODE 1SS202-1
FLD401	1-519-556-11	INDICATOR TUBE, FLUORESCENT
IC101	8-752-037-33	IC CXA1372Q
IC102	8-759-821-94	IC LA6532M
IC103	8-759-633-65	IC M54641L
IC201	8-759-630-21	IC M5290P-16
IC202	8-759-633-42	IC M5293L
IC301	8-752-333-31	IC CXD2500Q
IC302	8-752-334-06	IC CXD2551P
IC303	8-759-917-18	IC SN74HCU04N
IC304	8-759-998-22	IC PCM56P
IC305	8-759-998-22	IC PCM56P
IC306	8-759-631-39	IC M5204P
IC401	8-759-150-29	IC UPD75212AGF-522-3BE
IC451	8-749-920-83	IC GP1U52XB
J101	1-216-295-00	METAL GLAZE 0 5% 1/10W
J102	1-216-295-00	METAL GLAZE 0 5% 1/10W
J401	1-566-921-11	JACK, PIN 2P (LINE OUT L/R)
J501	1-568-519-21	JACK, LARGE TYPE (PHONES)
M101	X-4917-504-1	MOTOR ASSY (SLED)
M102	X-4917-523-3	MOTOR ASSY (SPINDLE)
M191	A-4604-363-A	MOTOR (L) ASSY
PS201⚠	1-532-685-00	LINK, IC
PS202⚠	1-532-637-00	LINK, IC
Q101	8-729-901-01	TRANSISTOR DTC144EK
Q201	8-729-111-67	TRANSISTOR 2SB1094-L
Q202	8-729-140-96	TRANSISTOR 2SD774-34
Q203	8-729-111-67	TRANSISTOR 2SB1094-L
Q204	8-729-230-45	TRANSISTOR 2SC2458-YGR
Q206	8-729-119-76	TRANSISTOR 2SA1175-HFE
R101	1-216-097-00	METAL GLAZE 100K 5% 1/10W
R102	1-216-097-00	METAL GLAZE 100K 5% 1/10W
R103	1-216-091-00	METAL GLAZE 56K 5% 1/10W
R104	1-216-099-00	METAL GLAZE 120K 5% 1/10W
R105	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W
R106	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W
R107	1-216-114-00	METAL GLAZE 510K 5% 1/10W
R108	1-216-105-00	METAL GLAZE 220K 5% 1/10W
R109	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W
R110	1-216-049-00	METAL GLAZE 1K 5% 1/10W
R111	1-216-049-00	METAL GLAZE 1K 5% 1/10W
R112	1-216-083-00	METAL GLAZE 27K 5% 1/10W
R113	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W
R114	1-216-105-00	METAL GLAZE 220K 5% 1/10W
R152	1-216-073-00	METAL GLAZE 10K 5% 1/10W
R153	1-216-085-00	METAL GLAZE 33K 5% 1/10W
R154	1-216-085-00	METAL GLAZE 33K 5% 1/10W
R155	1-216-093-00	METAL GLAZE 68K 5% 1/10W
R156	1-216-081-00	METAL GLAZE 22K 5% 1/10W
R157	1-216-079-00	METAL GLAZE 18K 5% 1/10W
R158	1-216-079-00	METAL GLAZE 18K 5% 1/10W
R159	1-216-079-00	METAL GLAZE 18K 5% 1/10W
R160	1-216-049-00	METAL GLAZE 1K 5% 1/10W
R171	1-216-001-00	METAL GLAZE 10 5% 1/10W
R172	1-216-001-00	METAL GLAZE 10 5% 1/10W
R173	1-216-001-00	METAL GLAZE 10 5% 1/10W
R174	1-216-001-00	METAL GLAZE 10 5% 1/10W
R201	1-249-425-11	CARBON 4.7K 5% 1/4W
R202	1-249-425-11	CARBON 4.7K 5% 1/4W
R203	1-249-438-11	CARBON 56K 5% 1/4W
R204	1-249-429-11	CARBON 10K 5% 1/4W
R205	1-249-435-11	CARBON 33K 5% 1/4W
R208	1-249-423-11	CARBON 3.3K 5% 1/4W
R209	1-249-417-11	CARBON 1K 5% 1/4W
R210	1-249-417-11	CARBON 1K 5% 1/4W
R302	1-249-417-11	CARBON 1K 5% 1/4W
R303	1-249-417-11	CARBON 1K 5% 1/4W
R304	1-249-417-11	CARBON 1K 5% 1/4W
R305	1-249-417-11	CARBON 1K 5% 1/4W
R308	1-249-423-11	CARBON 3.3K 5% 1/4W
R309	1-249-423-11	CARBON 3.3K 5% 1/4W
R310	1-249-429-11	CARBON 10K 5% 1/4W
R311	1-249-429-11	CARBON 10K 5% 1/4W
R312	1-249-441-11	CARBON 100K 5% 1/4W
R313	1-249-417-11	CARBON 1K 5% 1/4W
R314	1-249-417-11	CARBON 1K 5% 1/4W
R315	1-249-420-11	CARBON 1.8K 5% 1/4W
R316	1-249-418-11	CARBON 1.2K 5% 1/4W
R317	1-249-417-11	CARBON 1K 5% 1/4W
R318	1-249-417-11	CARBON 1K 5% 1/4W
R319	1-249-417-11	CARBON 1K 5% 1/4W

Note:
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Note:
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Ref.No.	Part No.	Description			
R320	1-249-413-11	CARBON	470	5%	1/4W
R326	1-249-411-11	CARBON	330	5%	1/4W
R327	1-249-417-11	CARBON	1K	5%	1/4W
R328	1-249-417-11	CARBON	1K	5%	1/4W
R329	1-249-417-11	CARBON	1K	5%	1/4W
R330	1-249-417-11	CARBON	1K	5%	1/4W
R331	1-249-427-11	CARBON	6.8K	5%	1/4W
R332	1-249-427-11	CARBON	6.8K	5%	1/4W
R337	1-249-417-11	CARBON	1K	5%	1/4W
R338	1-249-417-11	CARBON	1K	5%	1/4W
R339	1-249-413-11	CARBON	470	5%	1/4W
R341	1-249-441-11	CARBON	100K	5%	1/4W
R401	1-249-439-11	CARBON	68K	5%	1/4W
R402	1-249-435-11	CARBON	33K	5%	1/4W
R403	1-249-435-11	CARBON	33K	5%	1/4W
R404	1-249-435-11	CARBON	33K	5%	1/4W
R405	1-249-441-11	CARBON	100K	5%	1/4W
R406	1-249-425-11	CARBON	4.7K	5%	1/4W
R407	1-249-425-11	CARBON	4.7K	5%	1/4W
R501	1-249-402-11	CARBON	56	5%	1/4W
R502	1-249-402-11	CARBON	56	5%	1/4W
RV101	1-238-016-11	RES, ADJ, CARBON 10K			
RV102	1-238-016-11	RES, ADJ, CARBON 10K			
RV501	1-238-748-11	RES, VAR, CARBON 1K/1K (PHONE LEVEL)			
S101	1-572-085-11	SWITCH, LEAF (LIMIT)			
S191	1-572-086-11	SWITCH, LEAF (LOAD OUT)			
S192	1-572-086-11	SWITCH, LEAF (LOAD IN)			
S401	1-554-303-21	SWITCH, KEY BOARD (1)			
S402	1-554-303-21	SWITCH, KEY BOARD (6)			
S403	1-554-303-21	SWITCH, KEY BOARD (11)			
S404	1-554-303-21	SWITCH, KEY BOARD (⏏)			
S405	1-554-303-21	SWITCH, KEY BOARD (2)			
S406	1-554-303-21	SWITCH, KEY BOARD (7)			
S407	1-554-303-21	SWITCH, KEY BOARD (12)			
S408	1-554-303-21	SWITCH, KEY BOARD (▶)			
S409	1-554-303-21	SWITCH, KEY BOARD (3)			
S410	1-554-303-21	SWITCH, KEY BOARD (8)			
S411	1-554-303-21	SWITCH, KEY BOARD (CHECK)			
S412	1-554-303-21	SWITCH, KEY BOARD (▮▮)			
S413	1-554-303-21	SWITCH, KEY BOARD (4)			
S414	1-554-303-21	SWITCH, KEY BOARD (9)			
S415	1-554-303-21	SWITCH, KEY BOARD (CLEAR)			
S416	1-554-303-21	SWITCH, KEY BOARD (■)			
S417	1-554-303-21	SWITCH, KEY BOARD (5)			
S418	1-554-303-21	SWITCH, KEY BOARD (10)			

Ref.No.	Part No.	Description
S419	1-554-303-21	SWITCH, KEY BOARD (>12)
S420	1-554-303-21	SWITCH, KEY BOARD (TIME)
S421	1-554-303-21	SWITCH, KEY BOARD (EDIT/TIME FADE)
S422	1-554-303-21	SWITCH, KEY BOARD (TIME SET)
S423	1-554-303-21	SWITCH, KEY BOARD (CONTINUE)
S424	1-554-303-21	SWITCH, KEY BOARD (AUTO SPECE)
S425	1-554-303-21	SWITCH, KEY BOARD (◀◀)
S426	1-554-303-21	SWITCH, KEY BOARD (⏮)
S427	1-554-303-21	SWITCH, KEY BOARD (SHUFFLE)
S428	1-554-303-21	SWITCH, KEY BOARD (REPEAT)
S429	1-554-303-21	SWITCH, KEY BOARD (▶▶)
S430	1-554-303-21	SWITCH, KEY BOARD (▶▶⏭)
S431	1-554-303-21	SWITCH, KEY BOARD (PROGRAM)
S432	1-554-303-21	SWITCH, KEY BOARD (FADER)
S435	1-554-303-21	SWITCH, KEY BOARD (PEAK SEARCH)
S451	1-571-305-11	SWITCH, PUSH (1 KEY)(POWER)
SW001⚠	1-571-722-11	(E)...SWITCH, VOLTAGE SELECTION
T701 ⚠	1-449-921-11	(US).....TRANSFORMER, POWER
T701 ⚠	1-449-922-11	(AEP,AUS)...TRANSFORMER, POWER
T701 ⚠	1-449-923-11	(E).....TRANSFORMER, POWER
X301	1-567-926-11	VIBRATOR, CRYSTAL (16.9MHz)
X401	1-567-819-11	VIBRATOR, CERAMIC (4MHz)

ACCESSORY & PACKING MATERIAL

1-465-281-11	REMOTE COMMANDER
1-559-533-11	CORD, CONNECTION
3-750-792-11	(E,AUS)...MANUAL, INSTRUCTION
3-750-792-21	(US).....MANUAL, INSTRUCTION
3-750-792-41	(AEP).....MANUAL, INSTRUCTION
3-750-792-51	(AEP).....MANUAL, INSTRUCTION
*3-795-629-11	(AEP)...INSTRUCTION
4-384-285-01	COVER, BATTERY
*4-925-389-01	CUSHION
*4-933-231-11	INDIVIDUAL CARTON

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